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MEEHANS' MONTHLY.

A Magazine of Horticulture, Botany
and kindred subjects.

CONDUCTED BY

THOMAS MEEHAN,

FORMERLY EDITOR OF THE "GARDENERS' MONTHLY," AND AUTHOR OF THE "NATIVE FLOWERS AND
FERNS OF THE UNITED STATES." VICE-PRESIDENT OF THE ACADEMY OF NATURAL
SCIENCES OF PHILADELPHIA. BOTANIST TO THE PENNSYLVANIA
STATE BOARD OF AGRICULTURE, ETC.

ASSISTED BY

THOMAS B. MEEHAN, J. FRANK MEEHAN, S. M. MEEHAN.

Volume III,
1893.

ILLUSTRATED WITH COLORED LITHOGRAPHS,
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Preface to Volume III.

GENTLE READER: We herewith place in your hands the third volume of MEEHANS' MONTHLY; a work which we trust will continue till all the leading wild flowers of our beloved United States have been illustrated and described. There is nothing in it "continued." Each volume is a complete book in itself, which you and those who come after you will enjoy and profit by.

No one can expect to own much of this glorious world; but he may, in a certain sense, with our figures and descriptions, own the beautiful flowers which cover it.

To give you, good reader, this pleasure through all time, is the task we have set ourselves to do.

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OPUNTIA PROLIFERA

OPUNTIA PROLIFERA.

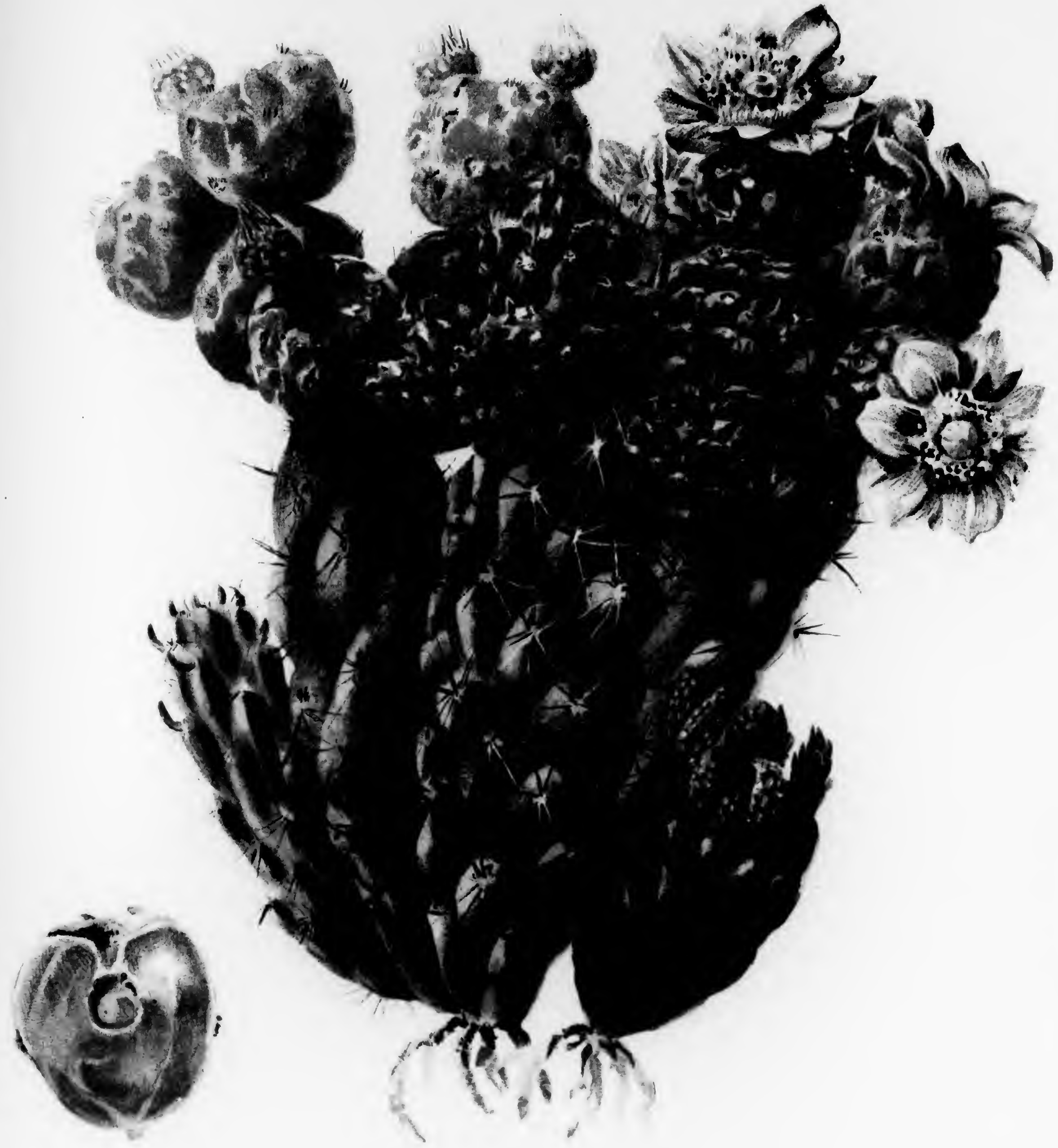
NATURAL ORDER, CACTACEÆ.

Opuntia prolifera, Engelmann.—An elongated shrub with elongated joints, covered with oblong obtuse tubercles, which bear three to six or eight spines, obscurely sheathed; flowers densely clustered at the ends of the branches, small brick-red; fruit (green) clavate, obovate, or sub-globose, fleshy, strongly tubercled, without spines, deeply umbilicate, almost always sterile and often proliferous; seeds, large, regular, with a broad prominent raphe. (Brewer and Watson's *Botany of the California Geological Survey.*)

Opus was a city of ancient Greece, and was destroyed eventually by an earthquake. The people of the district round about were called Opuntii; and Pliny the ancient Roman writer tells us that around the city grew a root much esteemed, and refers also to a fruit produced without any evident external flower, but bearing seeds within, no doubt referring to the fig. Hence probably arose the impression that the *Opuntia* of the ancients was a sort of fig, and the application of the name by some of the botanists of the sixteenth century, to a species of cactus which was brought from the West Indies on the early discovery of America, and which had an edible fig-like fruit, and was in fact known as Indian fig, is evident independently of the fact that it does not agree with the description of the plant Pliny writes of as growing round the city of Opus; it could have no relation with it, as the whole cactus family is a native of the new world,—and, though one *Opuntia* is found wild enough in Italy to deserve the character of indigenous, it is well known to be an importation originally from America. On the American continent cactuses are found in numerous species. They abound chiefly in Mexico, penetrating the United States to Colorado, chiefly by way of the dryer regions, in which they find themselves most at home.

In classifying these numerous species, Linnæus went no further than to divide them into groups. They were all referred by him to the genus *Cactus*. Since his time, several genera have been made of them—the name of *Cactus* simply representing the whole order *Cactaceæ*. *Opuntia*, as distinguished from other sections of the family, is referred to Tournefort, and was adopted by Haworth, a distinguished writer on succulents about the middle of the last century. The section, or genus as it may properly be called, is generally distinguished by the thick fleshy sections of stems, and flowers having no tube as in some of its near allies. There are other characters which those disposed to examine the order critically will ascertain and study,—but in this order especially we find that the divisions are not very clearly drawn in nature, and there are some species on the borderland which puzzle the botanist somewhat to place in a decided position.

The species we now illustrate however will cause no difficulty to the student, who will at once place it in *Opuntia*, though in its specific relations it comes closely to some others. It was first discovered by Dr. C. C. Parry in 1849 when connected as botanist with Lieut. Emory's survey of the Mexican boundary. He found it in the dry creek beds and on dry hills about San Diego in California; and it is remarkable that although the country has been pretty well explored since that time, this species has been found only in a comparatively limited extent of country as compared with the usual range of species in members of the cactus family. The cactuses collected by Dr. Parry on that expedition were described by Dr. Engelmann in *Silliman's Journal*, and this one named *Opuntia prolifera* from the singular circumstance of one flower growing out of another, as well shown in our illustration; that is to say, the flowers are proliferous. The branch from which our drawing was made was sent by Mr. Parish and planted in the open ground in the author's garden, where it rooted in a few months and flowered as represented in the illustration. But though this will serve to educate the student to recognize the species, it will afford but a poor idea of the peculiar effect of the plant on its native scenery. There it grows in immense masses, forming impenetrable thickets often eight feet or more high. In the early accounts of its discovery the thickets are likened to immense masses of



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INTENTIONAL SECOND EXPOSURE

coral reefs. In these cases the flower-bearing branches are not always erect, as one would imagine from our plate, but push out on all sides of the masses, and indeed are sometimes pendulous. One distinguished botanist who saw the plant on the writer's grounds, believes that the flowers are sometimes larger and more showy when they first appear from the proper stems, and before they become proliferous,—but those given in our plate accord with the dimensions as given in Brewer and Watson's "Botany of California." The effect on the landscape of the bright flowers on the huge succulent gray branches must be grand in the extreme.

In times not very long ago, the fact of one flower growing out of another in the manner these do would have been regarded as simply a monstrosity, and have excited little further thought. But in these days the facts are very welcome to the morphologist and physiologist, as aiding them to unlock the secrets of nature in regard to plant structure and the way plants live and grow. There was a time when the stem of a plant and its flower would have been regarded as essentially different organs; and even to this day there are some who while admitting that the parts of the flower are modified leaves, would hardly regard the stem and leaves as primarily identical. But in this case we see the fruit which we know to be modified leaves, acting as stem, and continuing the plants' existence as easily as the normal stem structure would. At Fig. 2, we note the flowers coming out of the fruit for the third successive year, and at Fig. 1, we have a fruit, finding itself in the earth, sending out normal branches instead of the proliferous flowers. The only difference notable between the fruit and the normal stems is, that they seem to have lost the power of producing spines, though fine bristles are sometimes found on them, which make it imprudent for any one to handle them incautiously.

What especial use the spines serve in the economy of cactus life, has long been a subject for philosophic speculation. Some have contended that some fruits are made attractive and edible as an aid in the distribution of the seeds. Animals take the fruit to their haunts, use the flesh, and scatter the undigested seeds in various directions,—certainly many fruit-bearing plants are widely distributed in this manner. Those who think this feature a special adaptation will see in the absence of spines in the fruit of this species, strong confirmation of this view. The plant would be spiny, it would be contended, in order to protect it against browsing creatures; while, when consumption instead of protection became useful to the plant, the production of spines would be arrested. It is the misfortune of speculations of this kind, reasonable as they appear in the solitary instances that suggest them, to be found wanting in other cases where the same reasons would seem to be necessary. But there are many cactuses wholly smooth in cases where protective spines would seem quite as desirable, and spiny fruit where it might seem just as useful to the plant that every inducement should be given to animal life to eat, and aid in seed-distribution.

Again it might be contended that if the distribution by birds or other creatures had been one of the conditions under which the species was formed, and that the fruit was rendered spineless in order that animals might be more readily attracted to the fruit, some color would be given in order to add to the attractiveness. Indeed it is generally claimed that the fruits on which most animals love to feed are beautiful as well as useful to them. In many plants of the cactus family the fruits are very highly colored. In this particular species, however, the fruit is green even when mature, and unless the creature desiring to feed on it had an educated eye, would most likely pass it wholly by. Perhaps a reply might be offered that as the plant is proliferous, seldom perfecting seed, there was no necessity for making attractive fruit.

The earlier botanists believed that the plant never produced perfect seed,—but "the Botany of California" says "almost always" sterile. And this qualification is correct, for out of about twenty cut open the writer found one with a single seed in the centre, which we have illustrated in Fig. 3.

As already noted it is found in but a limited geographical area. The "Botany of California" says "up the coast to San Beunaventura, and southward into the peninsula."

Explanations of the Plate.—1. Fruit producing normal branches. 2. Proliferous flowers. 3. Fruit with a single seed in the centre.

WILD FLOWERS AND NATURE.

THE BEAUTIFUL SNOW.

The silvery snow:—the silvery snow:—
Like glory it falls on the fields below;
And the trees with their diamond branches appear
Like the fairy growth of some magical sphere;
While soft as music, and wild and white,
It glitters and floats in the pale moonlight,
And spangles the river and fount as they flow;
Oh! who has not loved the bright, beautiful snow.
CHARLES SWAIN.

Picea Breweriana.—This beautiful Spruce is one of the more recently discovered, and was named after the well known, eminent botanist, Prof. Brewer. It has been supposed to be but local, having been found in but a very few localities. Mr. Thomas Douglas, son of the well known horticulturist, Robert Douglas, has now found a group of them in the Coast Range Mountains, in Oregon. Mr. R. Douglas writes very enthusiastically of the great beauty of this spruce. He styles it emphatically the "Weeping Spruce," and it might be as well that it should be known as the Pacific Weeping Spruce. Although it has been understood to be a very beautiful species, Mr. Douglas thinks it still more beautiful than it has been reputed to be. It grows at an elevation of from 7,000 to 8,000 feet on the Oregon boundary.

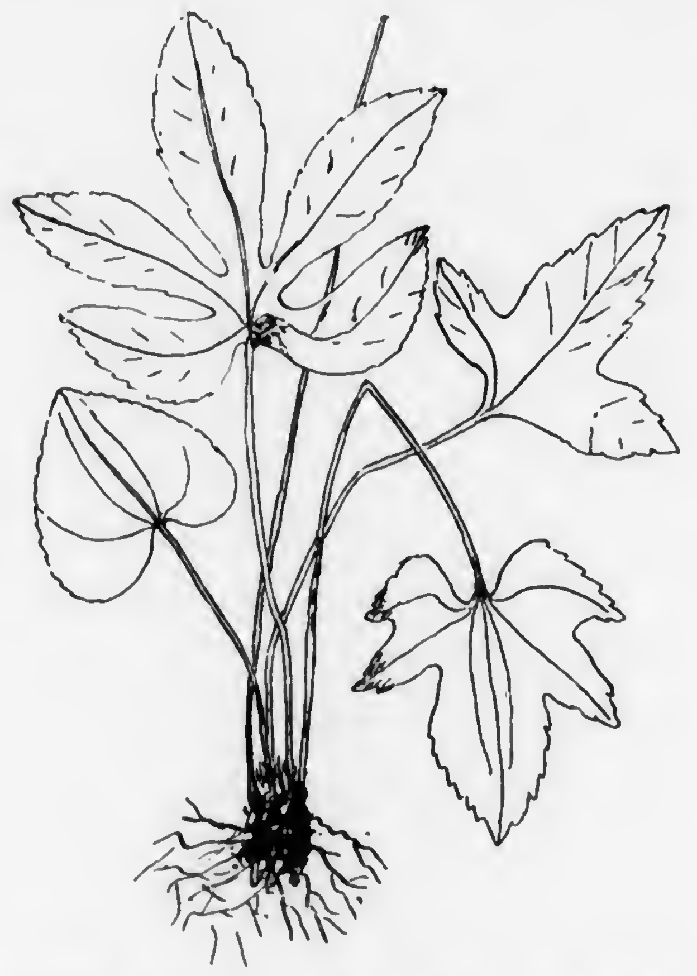
Asters in Wisconsin.—Mr. John W. Dunlop, Milwaukee, Wis., under date of October 31, 1892, writes:—

"As the season of wild flowers is now a thing of the past, we have time to reflect on what pleased us most during the summer. The season has been remarkable for the beauty of its flowers and for the great variety in flower simultaneously. This has been especially true of the Asters (Compositæ) of Wisconsin. They came in bloom in this order: *Aster terminalis* and *A. ptarmicoides* were first and were found in marshy ground. The next two, *A. corymbosus* and *A. macrophyllus*, are botanical curiosities. They were found on timber land adjoining the marshes. *A. turbinellus*, *A. lævis*, and *A. lævigatus* ought to be cultivated in every good garden. *A. patens* and *A. Shortii*, two more blues, but taller, ought also to be in cultivation here as they have been in Europe for the last fifty years. *A. cordifolius* and *A. sagittifolius* have been very gay in the ravines around Milwaukee. *A. multiflorus*, a small white species, has been like bouquets on the prairie. *A. miser* and *A. Tradescanti*, together with several other varieties, are not showy enough to gain a place in the garden. *A. sericeus* and *A. linifolius* are two of the most beautiful and desirable for cultivation. They are fine for rock-work as they are found on lime-stone ridges. We have a few strong species which grow on rich bottom lands that would make a fine show in among the shrubbery of a lawn. They are *A. Novæ-Anglæ*, *A. puniceus*, *A. longifolius*, *A. prenanthoides*. They could be cultivated with ease. The list I have given is not the full amount of the species in Wisconsin. We have over thirty species. I will tell you of our golden rods in another letter."

Natural Variation in Ferns.—Mons. H. De Varigny of Paris, makes an inquiry, given below. American ferns probably vary little, less even than flowering plants, still the experience of others would be very desirable.

"Page 164 of Meehans' Monthly I note that many ferns vary, and that Mr. G. J. Lowe has raised new varieties from bulblets. On the other hand, I see in H. Correvou's very interesting and valuable *Les Fougeres Rustiques* (2 Chemin Daucet, Geneva, Switzerland), that variation is very frequent among ferns. A curious fact is that according to the Swiss writer, variation in the wild state is more frequent in England than elsewhere. Some genera are recorded as more variable than others, such as *Scolopendrium*, or *Asplenium*. Could you, or any of your readers, inform me whether any genus seems to be particularly variable, or, contrariwise, particularly liable to variation, among American ferns *in situ?* And does any such genus seem to vary more in America, or one part of the United States than elsewhere? Information would be gratefully received by one of your constant readers."

SIGNIFICANCE IN LEAF VARIATION.—Mrs. W. A. Kellerman, observes :—"There is something particularly fascinating to me in the variation of leaves. Every herb, shrub or tree is full of autobiographical sketches. Look at the leaves of the hop vine (*Humulus Lupulus*) ; pull down a limb or branch of a mulberry tree, or notice the common elder (*Sambucus Canadensis*) and what curious variations you will see among their leaves. The more carefully you study these variations, the more significant they appear to be. They indicate so obviously their derivation from a primitive brotherhood. Here for instance, is a figure of a little *Viola cucullata*, *Var. palmata*. There is one leaf which "runs back" to *Cucullata* ; it shows at once where the plant belongs, and the other leaves are gradual developments which have proceeded by virtue of the two great fundamental laws underlying all progress ; viz. : adaptation and evolution. Although we cannot say that plants think or reason, we must admit that they contrive most admirably to meet the obstacles which beset them, and arm themselves for their tournaments and life-struggles with something akin to intelligence ; and *Var. palmata* needed more "luxuries" (just as our children nowadays, claim almost as their right, what were luxuries to us) and grew its leaves in accordance with this need, deepening and increasing its lobes. At first the variation of these children of *Cucullata* was so slight that no attention was paid to it, but it went on and on, till botanists could no longer endure to include them among the old heart-shaped leaves, and hence set them off by themselves as a variety. But botanists cannot keep them where they have placed them, for plants outgrow old descriptions, in spite of all the painstaking care spent upon them."



VIOLA CUCULLATAVAR. PALMATA.

As Mrs. Kellerman suggets, few studies give more pleasure than those connected with variation. Possibly some "hard headed" critic might ask whether it is really a fact that the polymorphic character of the leaves in the white mulberry, hop vine and others are modern and not ancient variations, — but a great beauty of such notes as these Mrs. Kellerman presents, is in the suggestive thoughts they originate.

AN ENORMOUS BALSAM POPLAR.—Near Geneva, New York, is a Balsam Poplar tree, 120 feet high, diameter of the top 115 feet, and with a trunk 23 feet in diameter. It is probably the finest specimen of this tree in the world. It is on the home grounds of Charles Bean, Esq. It has been taken for the common Canadian Poplar, but Dr. Sweet is authority for the corrected name. It is believed to be about 100 years old, and is called the Century Tree ; but as this would make an average increase of nearly three inches in diameter a year, it must be older than supposed.

NORTHWARD TREE LIMIT. The Birch seems to have advanced nearer the pole than any other tree, though the spruce, *Abies orientalis* is not far behind it. No evergreens were seen by the recent Peary Expedition to North Greenland. The late Finnish Expedition to the Kola peninsula found this spruce crossing the peninsula in a sinuous line between 70° and 71°,—but Lieut. Melville on Greeley's expedition found it on the islands north of the Lena river as far as 75°.

BENTHAMIA JAPONICA.—According to *American Gardening*, which figures the plant, *Benthamia Japonica*, is to be called *Cornus kousa* It takes the place of our *Cornus Florida* in Japan, and has enlarged bud-scales simulating an involucre as our Dogwood has. The union of the separate berries in a syncarp like a strawberry separated *Benthamia* from *Cornus*.

PLANTS TURNING TO THE LIGHT.—Though plants take an upright growth, seemingly "towards the light," it is by no means certain that it is light which they seek by striving in this direction. Potato sprouts in the darkest cellars, still strive upwards ; and a recent scientific paper shows that even a mushroom pushing downwards from a bank, or even in the darkness of a coal mine will curve upwards. Referring to the latter, Prof. E. J. Hill says :—"In reading the article "On the Direction of Growth in Cryptogamic Plants," I was reminded of the mosses, which I have mainly studied among cryptogams. The stems, pedicels, and fruit of these are usually at right angles to their support, at least, I do not recall any bending up from any position in which they may be placed, though I never made special study of this feature. Having handled a great many, if there had been a peculiarity of this kind at all general, I think it would have been noticed. As they grow in almost all positions on trees and branches, logs, stones and on the ground, their attitude may be observed. I do not here refer to the curvature of the capsule, which may occur in any position of the plant,—that, and the twisting of the pedicel to the right or left, or sometimes the upper part one way and the lower another, has always seemed very curious to me. But why ?

I have often noticed plants kept over night, or for a day or two in the tin collecting box had the floral end of the stem bent upward. They are in the dark except for brief intervals when the box may be opened to remove some specimen, which I should not deem a sufficient cause for the strong curvature seen in some cases. I noticed it in a few hours in the case of *Ranunculus abortivus* a short time since."

STERILITY OF HYBRIDS.—It has been known of late that hybrids between species of plants are by no means sterile as generally supposed. On the other hand Mr. G. J. Lowe, who was the earliest, and has been the most persistent experimenter in hybridizing ferns, states that hybrids between these are usually sterile. He has been experimenting since 1855. No other manipulation is required in hybridizing ferns than that spores of two species should be mixed in sowing. The cross-fertilization occurs during the sprouting and development of the spores.

MOSS BUNCHES ON THE POISON VINE.—The Mist tree, or, as it is sometimes called, the green fringe, is among the most interesting of our ornamental shrubs, by reason of the great profusion of moss-like stalks which are produced on the fruit bearing plants. The male plants have no moss or fringe. We do not know that it has been noticed in any botanical periodical that the common poison vine, which is a close neighbor of the Mist, indeed belongs to the same genus, namely, *Rhus*, frequently produces huge bunches of moss, very similar to that which is produced by the Mist tree. We suppose the dread which most people have of the poison vine has led to the ignoring of this special beauty. It is worthy of remark in this place that some scientific writer has recently alleged that the poisoning from the poison vine is of a bacterial nature. It is usually the case that when some prominent truth is brought forward in connection with the microscopic organisms, that it is very likely, to use a common expression, "to be run into the ground," and this is probably the case here, for we are quite sure that hundreds of people have taken the poison without actual contact with the plant, and it is not at all unlikely that these minute organisms will travel directly from the plant to the patient without some actual contact. On the other hand, there are hundreds of people who can handle and tear to pieces, even chew the poison vine, without suffering the least therefrom, and one would suppose that if bacteria had anything to do with the poisoning of people, this actual contact would be far more favorable to propagation than the mere walking by, without contact with the plants at all.

A remarkable fact in the history of the poison rhus is that cows, sheep, and probably all herbivorous animals, eat the plant greedily, but there is no record of any disastrous results.

RHODODENDRON MAXIMUM.—A new locality has been discovered for the Mountain Laurel by Park Commissioner Brown of Rochester, New York, who has found it only nine miles from that city. The Rochester *Post-Express* condenses what MEEHANS' MONTHLY (July, 1891) says of it, and credits it to *Gray's Manual.* It extends further north towards the east, but the Rochester station is possibly the most western one.

A WINTER SCENE IN NEVADA.—Since the opening of railroad lines across the continent, the unique beauty of the Rocky Mountain scenery, as it appears in summer time, is well known to most travelers ; but the particular fascination of the winter views is comparatively unknown. We have much pleasure in giving with this, an illustration of a winter scene in Reno county, Nevada. The arborescent vegetation is made up in great part of alders, various spruces, the pine, and arbor vitæa-like plants, in the character of *Libocedrus decurrens*, and cedars, — the prevailing characteristic, however, being of evergreens. It is interesting to note, as if there might be a certain particular intention of nature to repeat associations, that, while in the East, the mistletoe is always found on deciduous trees, in this part of the world nature has made the mistletoe to grow on evergreens, that is to say, it is a mistletoe to all intents and purposes, although classed by botanists as a distinct genus, called *Arceuthobium*. This is found chiefly on the *Libocedrus*. While our mistletoe has broad, green leaves, this species has none, the green, slender stalks seeming to act as leaves.

Winter scenery is well worth a study. The snow falling on all plants alike, one would imagine it would present a uniformity of appearance ; but it usually follows the conformation of the branches and foliage of each tree, and thus the snow character of two closely related species of pine will yet have different effects, corresponding with the slight difference in foliage.

A WINTER SCENE IN NEVADA.

SPRAYING PLANTS.—Noting a lady in her small conservatory recently, with a light water pot trying to sprinkle the plants through an old fashioned rose, the thought occurred how slow is progress in all matters of public interest, and in gardening not excepted. With the great advance made in "sprayers" of late years, water pots and syringes are now things of the past. Especially are sprayers desirable wherever plants are grown, since so many solutions for the destruction of insects and fungus troubles, have been found so effective.

EARLY SPRING FLOWERS IN CALIFORNIA.—The American Cowslip, *Dodecatheon Meadia*, is said to be one of the earliest if not the earliest spring flower in Monterey county, California. It was open the past spring on January 15th. On the prairies of the Atlantic slope it does not flower till May or June. Some botanists have made the Pacific forms distinct species.

THE ROSE ACACIA. — The Director of the Royal Gardens at Kew, writes for a seed vessel or seeds of *Robinia hispida*. The conductors of MEEHANS' MONTHLY never saw a seed vessel under cultivation,—nor in the mountains of Tennessee, where the senior conductor has found the plant in abundance. Has any ever seen, or do they possess a seed vessel?

It was at one time supposed that a barren plant had been first introduced to cultivation, and that all plants in gardens propagated from this had preserved the barren character. But if so, wild plants should seed.

GENERAL GARDENING.

THE CASCADE.

"Unconscious nature, with voice subdued,
Soothes the soul with its various tones—
The muffled roar of the wintry wood,
Or the sigh of the pines where the south wind moans ;
Or here, where the spray of the foam-cascade
Keeps green forever the moss-robed walls
Whose ferns and vines are an emerald braid,
Amid the murmur of waterfalls."
—"HOWARD WORCESTER GILBERT."

ARNEBIA CORNUTA.—The following note by a good correspondent of MEEHANS' MONTHLY, Mr. Oskar Lindkvist, of Ulricekamm, Sweden, refers to a beautiful Siberian annual which has appeared in some catalogues as a Lithospermum. The specific name, *Cornuta*, refers to small horns at the base on the inside of the Forget-me-not,—like flowers :

"Among the prettiest and most interesting annual plants, recently introduced in culture, the *Boraginaceæ* above mentioned must be reckoned. It probably originates from Abyssinia, of which country several of the perennial species at least are natives, and forms a herb 50–60 cm. high, richly and bushly branched, with narrow lanceolate leaves. The flowers, plentifully produced in the axils along the branches, as these grow, or in the tops of them collected in small clusters, are gamopetalous, with long tube and spreading five-cleft limb, about 2 cm. in diameter, bright-yellow colored, with five dark brown (almost black) cordate spots, very well contrasting with the bright ground. The entire herb is very hispid.

The pretty, brilliant, curiously spotted flowers, which are richly produced all the summer, ought to assure *Arnebia cornuta* (as it becomes generally known) a place in every garden. There, no doubt, it will prove suitable both for middle-sized groups and as solitary plant. It also produces charming bouquets

The seed, yet very dear, must be sown, or rather laid, very thinly (at an interspace of 8–10 cm.) in a hot-bed, and the seedlings transplanted in due time. The plant requires much room, good and nourishing soil, open place as sunny as possible. Also some support might sometimes be necessary in case of violent winds or showers.

I called this *Arnebia* (for also other, perennial species are, as hinted, to be found) not only a pretty but also an interesting plant, and I did so on account of the singular shifting color of the flowers. As these opened last summer, I soon observed some of them had the color and spots above described, while others had only three spots, and still others were mere yellow ; besides the spots were sometimes very dark, sometimes quite pale. I then thought the flowers had an uncommon propensity to vary (as do a great many plants), and so thought little on the subject. Toward the end of the summer, however, I began to examine the phenomenon closer : I marked some flowers (by tying a fine thread very loosely round them) and so day by day followed their development. The results of my observations were as follows : All the flowers, recently opened had the normal color and marks, but some day later two of the spots grew pale and continued so till they quite vanished ; then the remaining three spots in the same manner began to fade till they also were effaced and the flower was mere yellow. Some days afterwards it decayed.

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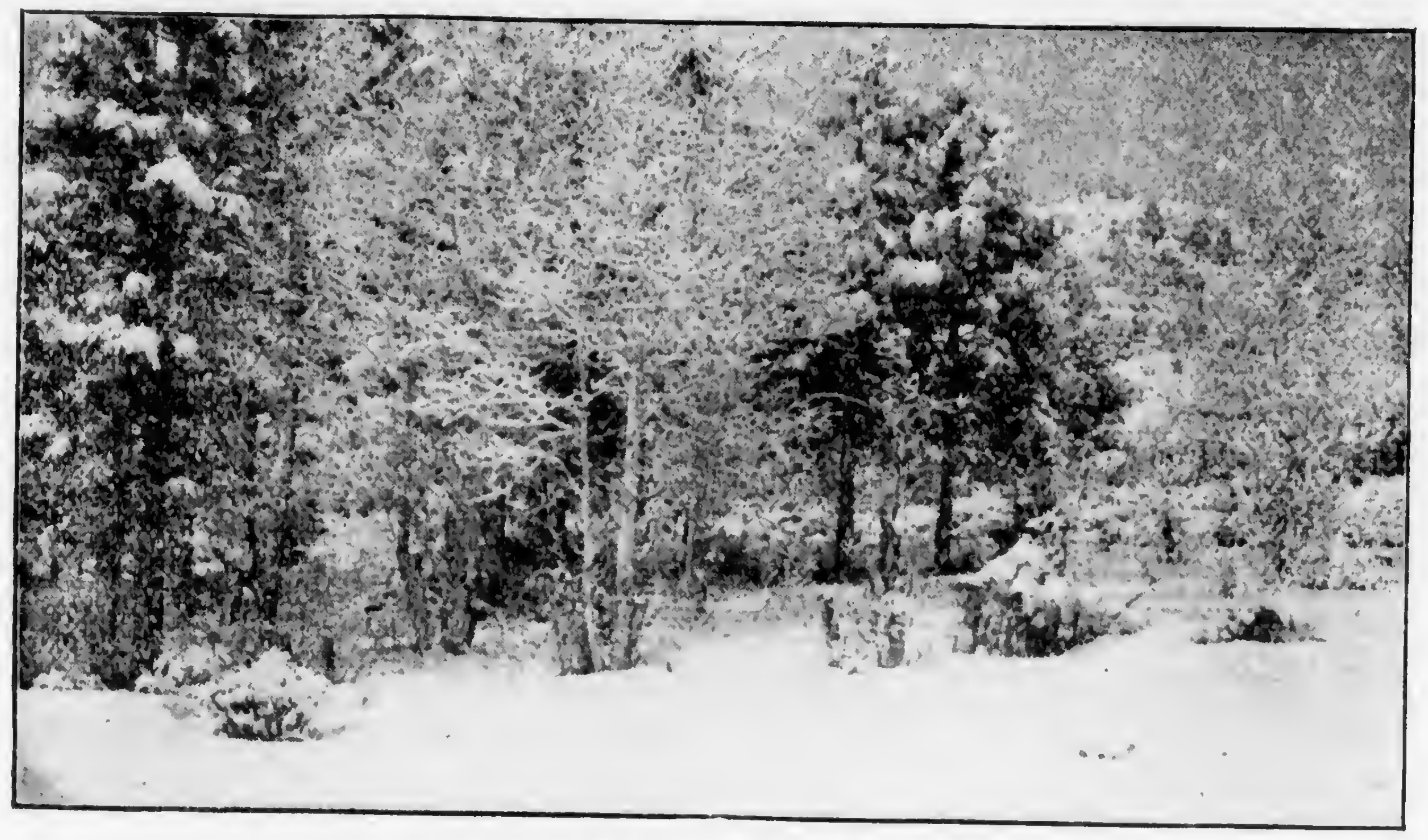
The reason of the name *Cornuta* must be a secret to everybody, except to the author himself. More reasonable it would have been to name the plant *Arnebia mutabilis*, though (as I hinted before) the singular shifting of color is not characteristic for this species *alone*."

It might be added to this very interesting note, that many boraginaceous plants have the power of changing color—the *Pulmonaria* or Lungwort for instance—but none to the extent described in *Arnebia*.

A WINTER SCENE IN NEVADA.—Since the opening of railroad lines across the continent, the unique beauty of the Rocky Mountain scenery, as it appears in summer time, is well known to most travelers ; but the particular fascination of the winter views is comparatively unknown. We have much pleasure in giving with this, an illustration of a winter scene in Reno county, Nevada. The arborescent vegetation is made up in great part of alders, various spruces, the pine, and arbor vitæa-like plants, in the character of *Libocedrus decurrens*, and cedars, — the prevailing characteristic, however, being of evergreens. It is interesting to note, as if there might be a certain particular intention of nature to repeat associations, that, while in the East, the mistletoe is always found on deciduous trees, in this part of the world nature has made the mistletoe to grow on evergreens, that is to say, it is a mistletoe to all intents and purposes, although classed by botanists as a distinct genus, called ***Arceuthobium***. This is found chiefly on the *Libocedrus*. While our mistletoe has broad, green leaves, this species has none, the green, slender stalks seeming to act as leaves.



A WINTER SCENE IN NEVADA.

Winter scenery is well worth a study. The snow falling on all plants alike, one would imagine it would present a uniformity of appearance ; but it usually follows the conformation of the branches and foliage of each tree, and thus the snow character of two closely related species of pine will yet have different effects, corresponding with the slight difference in foliage.

SPRAYING PLANTS.—Noting a lady in her small conservatory recently, with a light water pot trying to sprinkle the plants through an old fashioned rose, the thought occurred how slow is progress in all matters of public interest, and in gardening not excepted. With the great advance made in "sprayers" of late years, water pots and syringes are now things of the past. Especially are sprayers desirable wherever plants are grown, since so many solutions for the destruction of insects and fungus troubles, have been found so effective.

EARLY SPRING FLOWERS IN CALIFORNIA.—The American Cowslip, *Dodecatheon Meadia*, is said to be one of the earliest if not the earliest spring flower in Monterey county, California. It was open the past spring on January 15th. On the prairies of the Atlantic slope it does not flower till May or June. Some botanists have made the Pacific forms distinct species.

THE ROSE ACACIA. — The Director of the Royal Gardens at Kew, writes for a seed vessel or seeds of *Robinia hispida*. The conductors of MEEHANS' MONTHLY never saw a seed vessel under cultivation,—nor in the mountains of Tennessee, where the senior conductor has found the plant in abundance. Has any ever seen, or do they possess a seed vessel?

It was at one time supposed that a barren plant had been first introduced to cultivation, and that all plants in gardens propagated from this had preserved the barren character. But if so, wild plants should seed.

GENERAL GARDENING.

THE CASCADE.

"Unconscious nature, with voice subdued,
Soothes the soul with its various tones—
The muffled roar of the wintry wood,
Or the sigh of the pines where the south wind moans ;
Or here, where the spray of the foam-cascade
Keeps green forever the moss-robed walls
Whose ferns and vines are an emerald braid,
Amid the murmur of waterfalls."
—"HOWARD WORCESTER GILBERT."

ARNEBIA CORNUTA.—The following note by a good correspondent of MEEHANS' MONTHLY, Mr. Oskar Lindkvist, of Ulricekamm, Sweden, refers to a beautiful Siberian annual which has appeared in some catalogues as a Lithospermum. The specific name, *Cornuta*, refers to small horns at the base on the inside of the Forget-me-not,—like flowers :

"Among the prettiest and most interesting annual plants, recently introduced in culture, the *Boraginaceæ* above mentioned must be reckoned. It probably originates from Abyssinia, of which country several of the perennial species at least are natives, and forms a herb 50–60 cm. high, richly and bushly branched, with narrow lanceolate leaves. The flowers, plentifully produced in the axils along the branches, as these grow, or in the tops of them collected in small clusters, are gamopetalous, with long tube and spreading five-cleft limb, about 2 cm. in diameter, bright-yellow colored, with five dark brown (almost black) cordate spots, very well contrasting with the bright ground. The entire herb is very hispid.

The pretty, brilliant, curiously spotted flowers, which are richly produced all the summer, ought to assure *Arnebia cornuta* (as it becomes generally known) a place in every garden. There, no doubt, it will prove suitable both for middle-sized groups and as solitary plant. It also produces charming bouquets

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INTENTIONAL SECOND EXPOSURE

GROWING WINDOW FLOWERS. — Growing window flowers is, like the art of ripening fruit, one of those matters which can only be well learned by experience and careful observation. It is not uncommon to see windows, attended by ladies who have not the slightest knowledge of any of the principles of gardening, showing the most successful growth of flowers —not even first-class florists being able to compete with the ladies in the excellence of their productions; still there are some few general principles which can be given, by which everybody may profit. For instance, in the use of water, strange to say, even some college students who had been educated by a very eminent professor of horticulture, could give no intelligent reason why there should be a hole in the bottom of a flower pot. In a general way they knew that it was to carry off water—but why the water should be carried off was a mystery to them. They knew that plants could not live without water, and yet they remembered that if a plant was continually in a basin or vessel of water it would soon die. The real explanation of this apparent contradiction is that plants do not want water so much as they want air. They want moisture, but they must have air also, and the continual watering which plants require is just as much to provide them with a new supply of air as it is to give them water. No plant adapted to growth on land can live long without a supply of oxygen. It is the oxygen which prepares the food which the plant has to take up; and good earth, especially when comparatively dry, is full of air. The plant takes out from this supply the oxygen it requires, and what is left is then impure. And this impure air is driven out when the earth is thoroughly soaked with water. When that water again disappears, air follows. Watering then is just as much to drive out the impure air as it is to furnish the plant with moisture. Now when we remember this, we can apply it practically to the cultivation of many kinds of window plants, especially those which are grown in baskets or on blocks. One of the best lady cultivators of basket plants, whom we know, has each basket dipped, until it is thoroughly soaked, in a bucket of water every morning, and is then taken out and suffered to drain. If a plant in a basket were to be thoroughly soaked in water a dozen times a day, it would not hurt it, but would rather be a benefit, because in that way a continual supply of fresh air would be furnished to the roots. Again, in the culture of plants in pots, we see the necessity for drainage, so that the water may rapidly pass away. If the hole at the bottom of the pot be so completely choked that water cannot pass rapidly, the water remains in the soil and thoroughly prevents the circulation of air through the soil, then, to use a common expression, it "sours"—that is to say, it has not oxygen enough to sweeten it, and every one knows that the result of sour soil is the rotting of the roots, followed by yellow and sickly leaves,—and if the trouble continue long enough, the final death of the plants.

DISEASE ON THE CALIFORNIA MAMMOTH TREES.—A correspondent, Mr. A. A. Cope, of Haverford, Pa., inquires for the best method of preserving young Mammoth Trees healthy. It is generally known that, on account of a small fungus which follows the tree from California, the healthy growth of these wonderful trees in the East is rendered practically impossible. The fungus spreads through the growing season, and before fall nearly every green shoot is destroyed. Since, however, the discovery of the copperas solutions there is hope that this fungus may be destroyed. The conductors have tried it on one tree for one season, which was very nearly destroyed by the fungus, and it seems to be entirely successful. The tree was brought from California with a number of others in 1883. Every summer the disease spread as the trees grew, until eventually all but one was thoroughly destroyed,—that one, two years ago, had only about six inches of healthy green leaves left at the apex. The past season, just before growth commenced, it was treated to a syringing of the copperas solution, with another dose some four or five weeks afterwards. To-day the specimen has a mass of healthy green foliage at the top of the bare stem, some two feet thick and two feet wide, a result which certainly would not have been obtained except for the use of the copperas solution. There is every reason to believe that if the young plants from California seed were thoroughly washed with this solution during the first year of their growth, the fungus would be so entirely destroyed that the tree would probably remain healthy during the whole of its life afterwards.

A SEA-SIDE WALK.—Occasion was taken recently to note in the cases of rockeries, the incongruity of placing rough rocks in situations out of character with the surroundings; and this brings to mind that one of the principles most difficult to accomplish in landscape gardening is that of introducing such things in harmony with these surroundings. Vases and statuary are entirely out of place in natural scenes of landscape gardening; and it is only in very rare instances that the art of a landscape gardener can so combine these artificial characteristics with natural beauty as to make the whole a pleasure to the beholder. One of the most successful instances of this combination is on the grounds of St. Clare, the country-seat of Augustus Vernon Harcourt, Esq., but recently occupied by a well-known American lady, especially fond of gardening, Mrs. Wheeler, of Bryn Mawr, near Philadelphia, who for several seasons has had her summer residence in England there. The view fronts on the Solent Sea, the shores of which are kept in place by a high sea wall. Nearly level with the top of this wall a flat plateau has been formed, through the centre of which is a broad, straight avenue, terminating in a rustic summer house. This structure is formed of boards, on which are fastened split branches, all arranged in various geometrical forms, kept continually varnished for its perpetual preservation. Along the sides of this broad avenue, at regular distances, are pairs of vases, which, in summer time, are filled with blooming flowers. The cooling breezes of the ocean make this walk a popular promenade; while the huge elm trees, with their spreading branches overhead, add to the coolness which the sea breezes afford. When this piece of landscape gardening was first accomplished some fifty years ago, it was considered one of the best specimens of artificial gardening in England. In the early days of the reign of Queen Victoria, on her marriage with Prince Albert, St. Clare was a frequent visiting place, and this particular promenade a favorite walk. It was one of the early lessons to the writer of this, that human nature is the same whether the heart beats in a queen or in a subject. It is not uncommon to see young folks together in the early days of life, one perhaps leading the other, on some dangerous spot, as for instance trying to walk along the iron rail of a railroad track. In like manner, the writer of this can see, although now so long ago in the distance, the young Queen trying to walk along the narrow top of a sea wall here depicted, with the Prince holding her hand to steady her for fear of falling in the waves. "Would the Queen be pleased with

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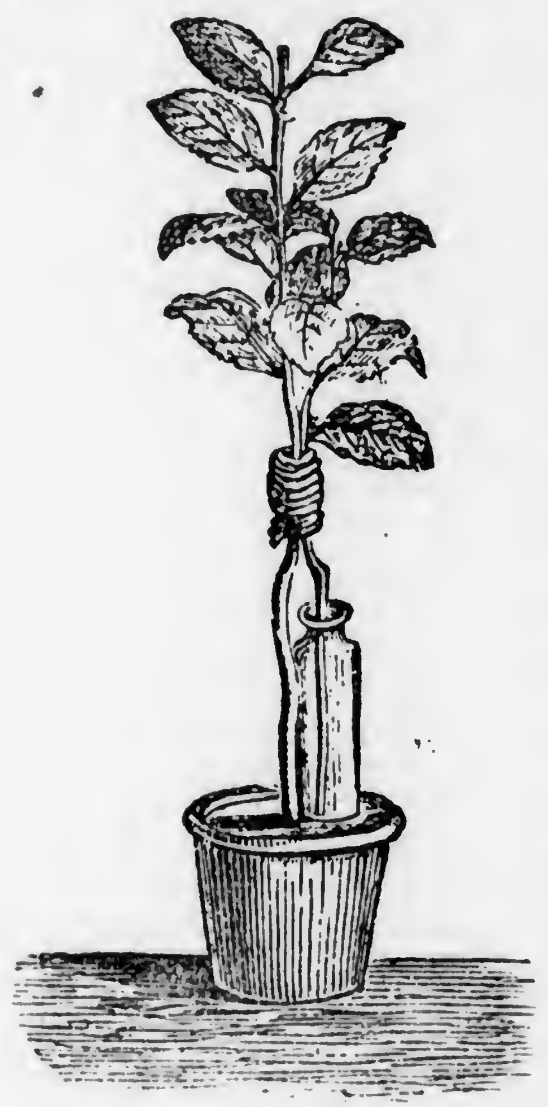
INTENTIONAL SECOND EXPOSURE

this?" once said the writer timidly to one near her. "Why not," was the reply; "human nature is the same everywhere." And it is.

Grafting for Amateurs.—It is now nearly a century since the father of the writer of the present paragraph invented a method by which amateurs who were not well acquainted with the ordinary processes of scientific grafting might very readily accomplish the same object by a species of inarching, which is now popularly known as bottle grafting. Inarching is simply drawing together the branches of two trees growing side by side, slightly shaving the bark down to the wood and then fitting the two shaven sides closely together and tying them tightly with bast or even cotton yarn. In a few weeks the two branches will be united together when the one desired may be cut from the parent's stem. By this method moisture is conveyed to the grafted portion until it is united. The same thing is accomplished by the use of a bottle of water which keeps the graft moist in the same way as if it was really attached to the mother plant. Half ripened wood is the best for this kind of grafting. Wood of last year or, as gardeners say, old wood, is not so good for the purpose. Oranges, lemons, camelias, or in fact anything of this kind which amateurs desire to increase can be propagated easily this way without the nice care which other more complicated systems of grafting require.



The Rose Polyantha Stock. — French rose growers of Lyons claim that roses grafted on the *Polyantha*, will bloom fifteen days earlier and have double the bloom than those grafted on the dog-rose, which hitherto has been the popular stock with European rose growers.

Cosmos.—Mr. N. F. Cressman suggests that some brief notes on the history of this now popular flower, might be interesting. The name is, pure Greek, *Kosmos*, that is beautiful, and was given by the celebrated Spanish priest-botanist, Cavanilles, to this genus, from the beauty of the purple and yellow flowers of the original species on which the genus was founded. They favor low grounds and brooksides in parts of Mexico, as our *Bidens* do here. They are closely related to the latter genus, and to the Dahlia. Though *C. bipinnatifida* has been introduced to European cultivation for nearly one hundred years, it is only of late years that the "daisy" family has gained a place in popular fancy, and that Cosmos has been found to be an annual eminently suited to American taste and American gardening.

A National Road Department.—A letter from Col. Albert A. Pope, of Boston, suggests that a National Department, having the oversight of road improvement throughout the nation, should be established at Washington. Meehans' Monthly hardly considers this advisable. Every one knows the importance of good roads, the difficulty is to find the money to improve them. It would seem that the matter might be simplified by allowing townships or counties to issue bonds wherewith to improve the roadways; and the revenue derived from the higher assessments of properties along the line of the road which would surely follow from these improvements, would eventually pay the bonds. This is probably the only solution that will ever be arrived at in regard to the general improvement of roads.

A Large Rose Tree.—At Cologne there is a rose tree which is believed to be 300 years old, and has a trunk of four feet in circumference. California has one at Ventura which is now three feet in circumference at the ground. It was only planted in 1876, and now covers 2000 square feet,

To Restrain Shifting Sand. — *Popular Science Monthly* recommends the Ailantus as an excellent tree to plant near the sea-shore or elsewhere where it may be desirable to restrain shifting sand.

Plants in Heavy Boxes —Miss Katherine Rhoads, of Haddonfield, N. J., refers to the great difficulty which so many people find in moving large tubs with ornamental plants from the lawn to the cellar for protection in the winter time. The plant in question is a very large Crape Myrtle. It does not seem to be generally known that a large number of these plants can be shaken out of their tubs in the fall and by themselves taken into the cellar, or other place for protection. The tub can follow, the earth can then be carried down and placed in again, and the plant thrive and do just as well, or if not better, as if the enormous weight was undertaken to be placed down in one job. This treatment can be particularly applied to large American Aloes, Sago plants, and similar kinds, which are in themselves particularly heavy. Some of these, in fact, can be taken and kept in cellars with a little earth around them, without any tubs or box at all, and then replanted again in the spring in the tubs in which they were growing the year before. This practice lightens the work and, in many cases, is far better for the plants than if they were suffered to remain from year to year in the same tub.

Horticulture in South Dakota.—A correspondent of Meehans' Monthly from Watertown, speaks enthusiastically of the great love for horticulture in South Dakota. And horticulture there does not mean simply the mere commercial aspect of gardening, which is well encouraged, but the amateur love of horticulture for its own sake, and without which commercial gardening would be shorn of support. There is a flourishing horticultural society already there.

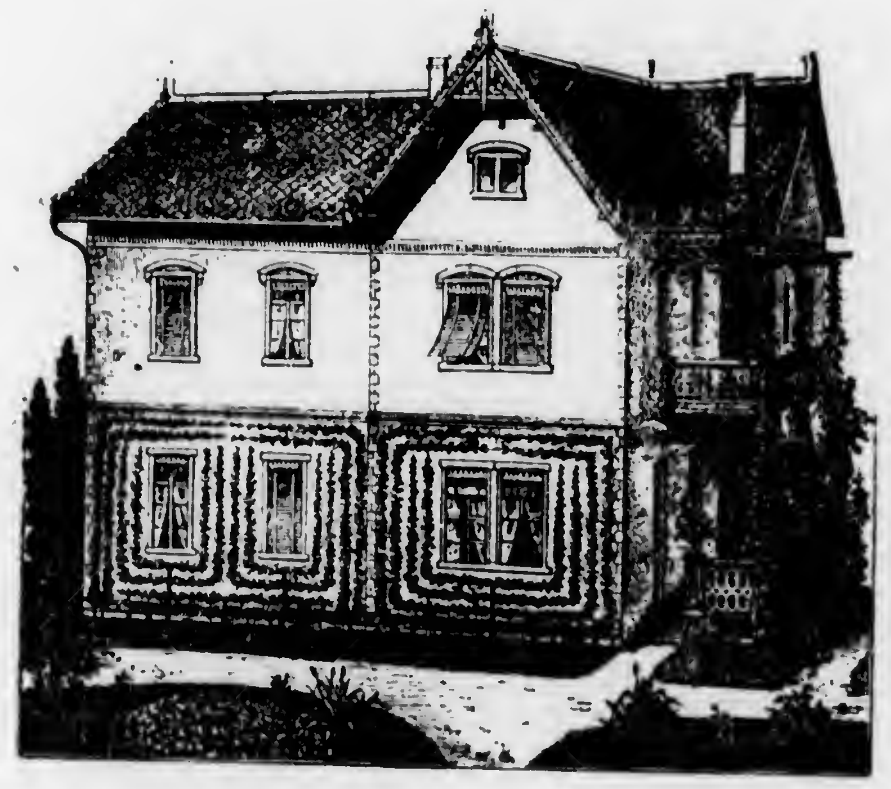
An Old Rose Bush. It is said that at Hildersheim, an old town in Hanover, there is still existing a rose bush planted by the Emperor Charlemagne a thousand years ago. It is said to have been planted in commemoration of a visit from the author of the "Arabian Nights." Possibly this part of the story is apochryphal, for we have no certain knowledge that it was customary in olden times to plant memorial trees or flowers, still this is the accepted history.

FRUITS AND VEGETABLES.

The Art of Ripening Fruit.—A correspondent remarks that we say the proper ripening of fruit is an art, and he would like to have further details as to how that art is to be learned. Unfortunately this is just one of those points which cannot be taught by printed lessons, but is one of those little things which each one has to learn by hard experience. Taking pears, for instance, no two varieties of pear require the same treatment—each one has a favorite line for itself—which those who would like to master the art must find out especially in each case,—and in like manner no two persons have exactly the same facilities, and, therefore, no treatise on the art of ripening could instruct the fruit grower as to the best method of ripening them. Some pears, for instance, require to remain on the trees as long as it is possible before frost reaches them; and even in the summer time some varieties of pears are much better left on the trees until, by slightly lifting the fruit, it is found to separate easily from the parent stem; but, again, there are some varieties of pears which, if suffered to remain this length of time, would rapidly, in technical language, rot at the core. Where one finds that he has a pear which is liable to this rapid decay from the interior, he has to gather the fruit a week or two before it reaches this stage of maturity, and even then very nice conditions of light and shade, and of heat and cold, will make all the difference between a first-class pear and a poor one. While there is undoubtedly a great art in ripening pears and other fruits of this character, to our mind it is utterly impossible that any lessons of detail could be given that would be of the slightest value to any one; and all that can be done is to suggest to the grower that there is such an art, which, by a little careful observation and experience he could learn for himself.

California in New York.—It is said that for all the cost of transportation, prices which the California garden products bring in New York, bring profitable returns to the grower. In the early part of February canned asparagus wholesaled at $4 per dozen; raisins, 5¼ cents per pound; prunes, 7½ cents per pound; Lima beans, $1.50 per bushel.

SPECIAL CULTURE OF FRUIT TREES.—MEEHANS' MONTHLY had occasion recently to refer to the fact that the management of pears after they were mature, had as much to do with their quality as anything that the tree itself could do, that a good pear was as much a work of art as of nature. Special reference was made in this connection to the Kieffer pear. A small illustration is now before us in connection with the Le Conte. As usually found in markets, this is a pear that is scarcely worth eating when other varieties are to be had. The specimen before us is of a different character. It would be regarded by a connoisseur as far above the average of pears in all that makes a good eating pear desirable. This specimen was prepared, so to speak, by Mr. Joseph Meehan, the well known horticultural writer, in connection with the *Weekly Press* and *Practical Farmer*. In like manner, we have seen pears taken from trees that have been carefully trained and cared for by skilled cultivators, that have an excellence of character far beyond the same varieties that are simply gathered from trees that are left to grow just as nature makes them. This skill in the treatment of pear trees is particularly evidenced by the work of the Belgium pear culturists. Few people ever eat a pear outside of Belgium equal to those of the same varieties grown by the skillful cultivators of that land. They take pains to train them on trellises, or even on the sides of a house, and it is just from these skillfully trained trees that the specimens of particular excellence are usually obtained. We give with this, an illustration of a pear tree trained over the side of a cottage, for which we are indebted to the "Journal of the Horticultural Society of Tuscany," which, however, gives the original credit to M. Burvenich, of Brussels. The Journal takes the opportunity of recommending that some such care should be given to the training of fruit trees in Italy as is given in Belgium, if the same admirable results are expected. One great advantage to fruits of training in this way, comes from the horticultural lessons which such experience give. If you can successfully train trees in this manner so as to be able always to keep healthy leaves and first-class fruit equally at the base of the tree as at the extremity of the limbs, which he must do to be a successful trainer, he will have solved a very large number of problems that vex the fruit grower in these directions.



COOKING POTATOES.—*The California Fruit Grower*, an excellent practical paper of the Pacific coast, well observes that cooking potatoes is an art, and though it is the most common of all vegetables on the table, no one vegetable comes before mankind so often in a poor condition. Those of mankind who have had experience in "camping out" may well claim to have some knowledge of cooking this esculent, and one might say that whether a potato is, or is not well cooked is often a difference of opinion between those who eat it. Some people have a taste for the dry, mealy condition; while others prefer that firm texture which is a peculiar characteristic of the new potato. The misfortune generally is that the potato comes on the table soggy, which is generally caused by a desire to keep it hot. A potato to be good should be allowed to have a considerable portion of the steam carried away before the dish cover is placed over it, and this, after all, is one of the best hints that could be given for having a potato in the best condition. *The Fruit Grower* states that the great injury to potatoes in cooking is from boiling them too rapidly. They should be placed over a moderate fire and boiled slowly, and when apparently nearly done, a small quantity of cold water should be thrown in, in order to retard the effect of the heat when allowing it to boil the second time. This seems to be the only novel point brought out, beyond those which are already well known to good potato cooks.

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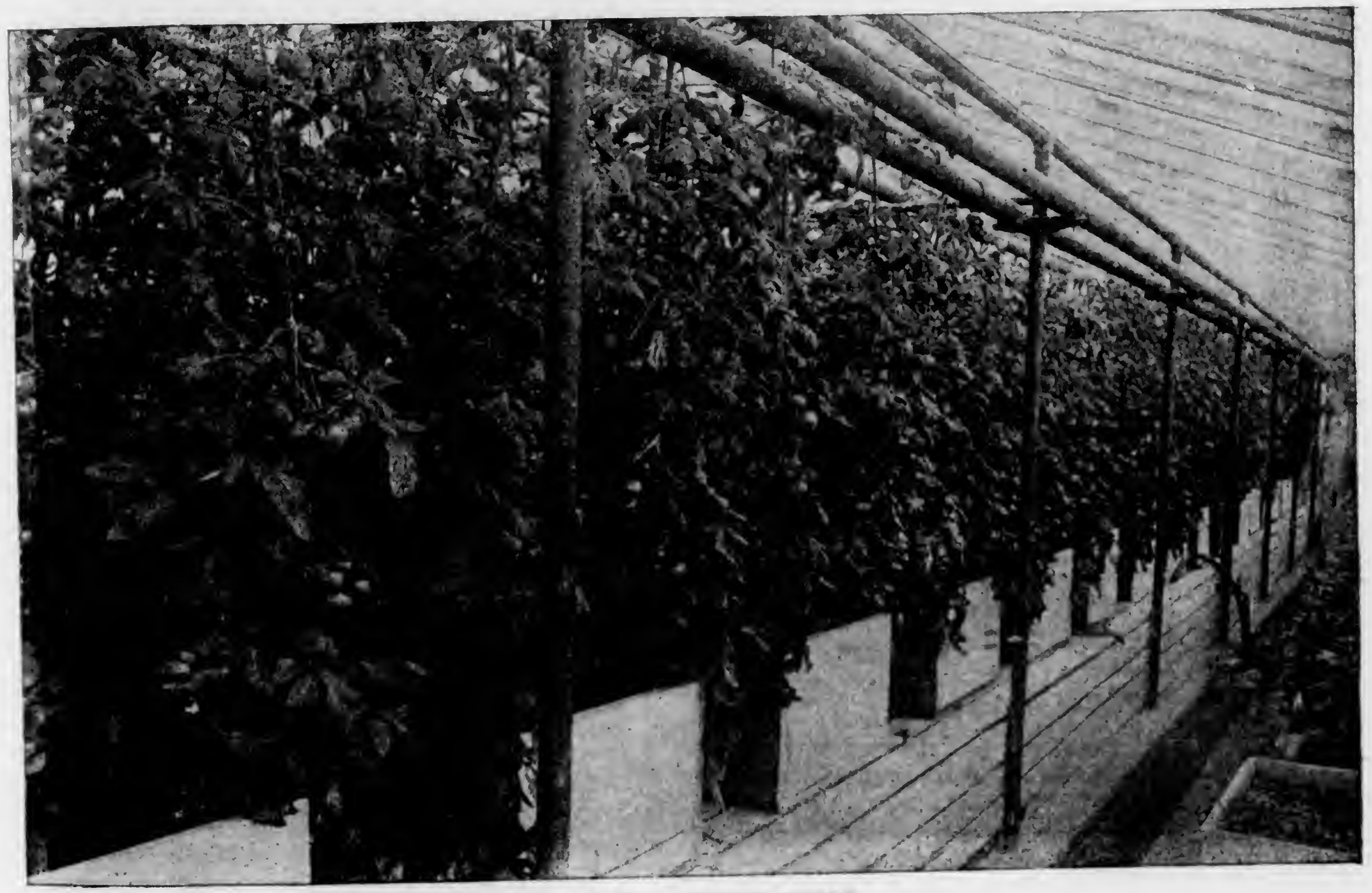

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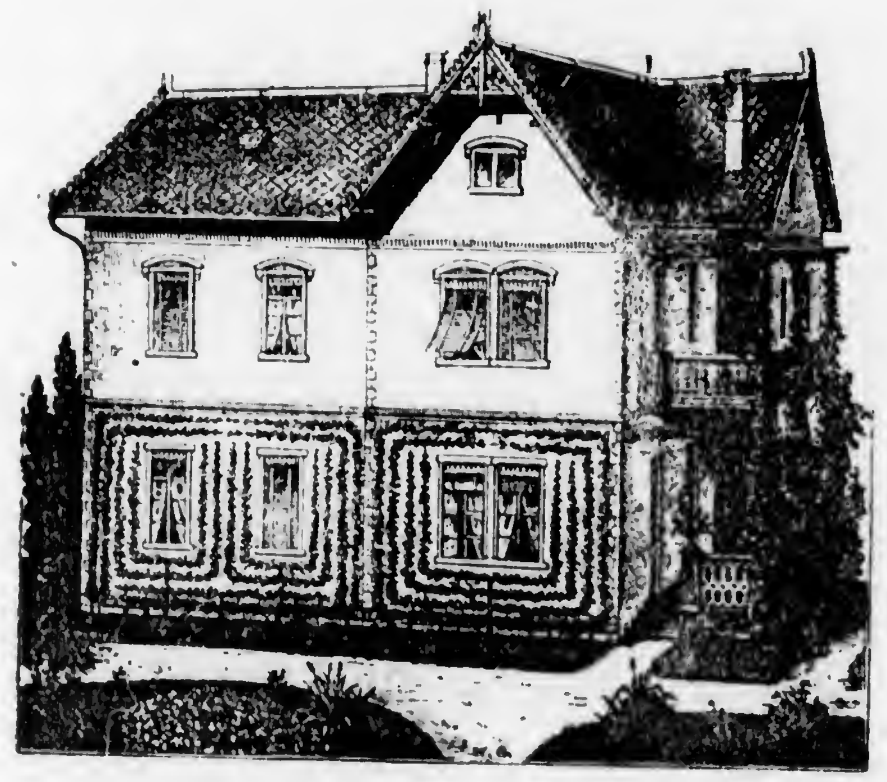

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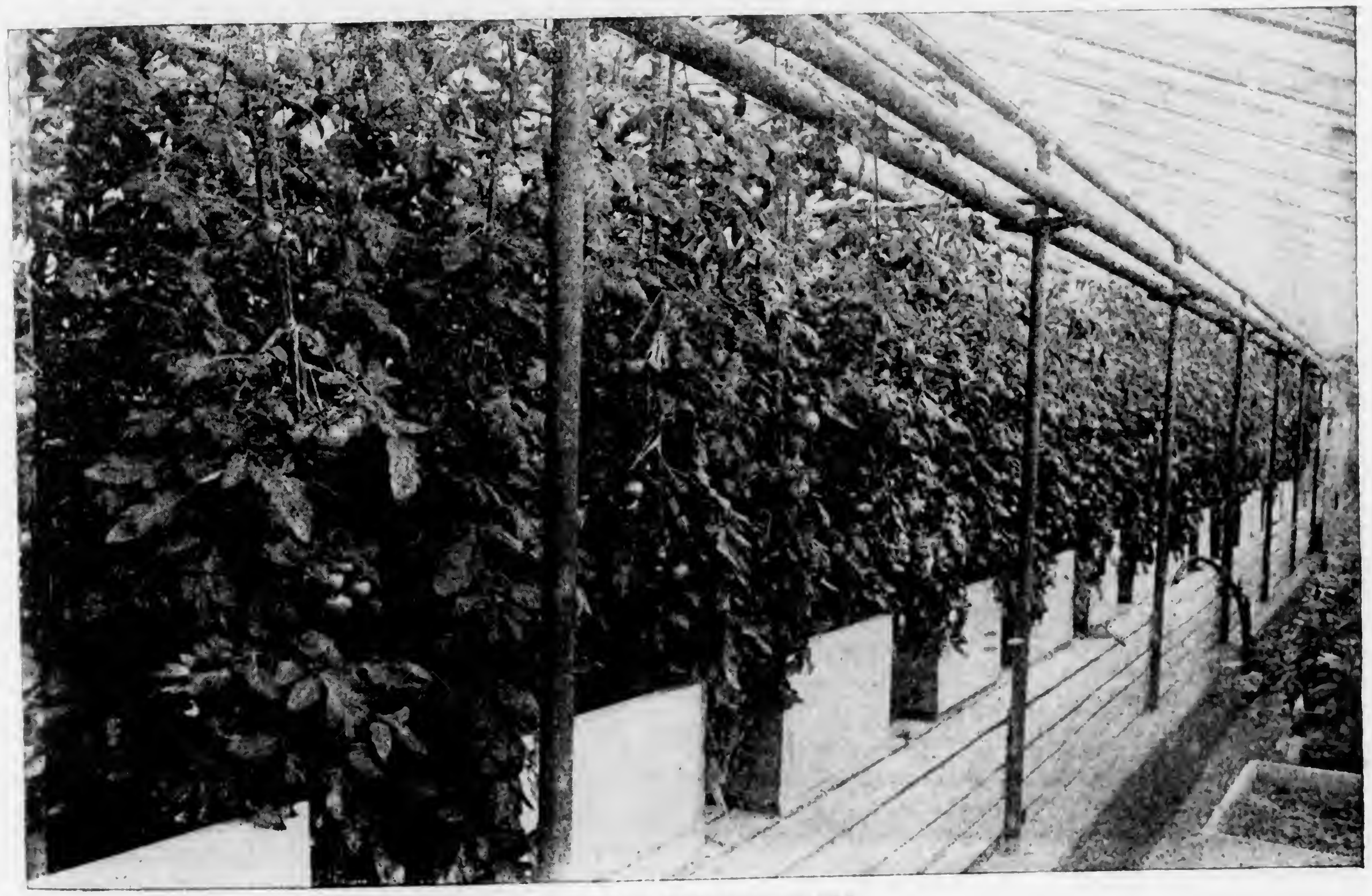

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INTENTIONAL SECOND EXPOSURE

BIOGRAPHY AND LITERATURE.

HOPE ON.

——These naked shoots,
Barren as lances, among which the wind
Makes wintry music, sighing as it goes,
Shall put their graceful foliage on again,
And, more aspiring, and with ampler spread,
Shall boast new charms, and more than they have
lost. Cowper.

A New Location for the Garden of Eden. —A lady, congratulating the senior editor of Meehans' Monthly on the safe return of his son from the Peary Arctic Relief Expedition, informed him that she was sure some time before that he would never discover the North Pole. She said she was sure of this from the wonderful display of the Aurora Borealis, which occurred while he was on the Expedition. She remarked that the exact site of the Garden of Eden had never yet been located; but, said she, "You remember that when Adam and Eve were driven out of Paradise, cherubims were placed at the gate, with flaming swords, to prevent them from returning thereto." "Now," she continued, "You know that every place on the earth has been ransacked to find the Garden, and the only place not yet visited is the North Pole. There is no doubt in my mind that the North Pole is the Garden of Eden and that the Aurora Borealis is the flaming swords of the cherubims that are still guarding the gates." Noting that the lady was uniquely constituted, it was quietly remarked to her that the remains in a fossil condition of tropical ferns and plants, and of elephants, found in the Arctics, might seem to confirm her views. The conversation ended with the feeling that the notions of people, whom all would regard as peculiar, are yet often sustained by what might seem to be good collateral evidences.

Mr. L. H. Bailey. —Professor Bailey having recovered his former health, again assumes the editorship of *American Gardening*.

Prof. F. Lamson Scribner.—The "Grasses of Tennessee," Part I. The cultivators of Tennessee are in luck, and are to be envied. To have such a work as this, botanically accurate, beautifully illustrated by a facile pencil, and with a full popular account of the grasses of the State, issued freely to all who apply, is surely a privilege not often enjoyed by citizens elsewhere. Prof. Scribner is one of the leading authorities on grasses, and this gives this work additional value. The man of mere science as well as the mere practical man, will find himself equally well served in these papers.

Indians as Fruit Growers —Many of the native tribes of Indians were good gardeners, and quite progressive ones at that. Through the earlier missionaries, European fruits and vegetables were introduced to this continent by which some of the Indians were glad to profit. Mr. Geo. C. Conover has an ancient map of a Seneca settlement near Geneva, whereon is located the site of an orchard of apple trees planted by that tribe.

Mr. Canby's Herbarium. — Mr. William N. Canby, of Wilmington, Del., has sold his herbarium to the New York College of Pharmacy for $6,000. This is probably one of the best private herbariums in the United States, and as is usual in such cases, many public institutions are now saying, "We wish we had known that it could be obtained. We would have liked to have had it for our institution."

Josiah Hoopes.—It is gratifying to the lovers of botany and ornithology to learn that Josiah Hoopes who has rendered so much good services to these special branches of intelligence in the past, is enjoying good health with advancing years, and that ornithology especially continues an active branch of study.

The Educational Value of Plants' Names.—Few accomplishments are more valuable than the ability to clearly and fluently express our thoughts. A broad acquaintance with our mother tongue is an admirable aid in this direction. Modern language is an outgrowth of ancient roots, and botanical names furnish a sort of connecting link between the old and the new, aiding wonderfully in giving clearer ideas, and thus more fluency to the language we use, Mr. C. F. Saunders, of Philadelphia sends the following, which suggests this preface:

"I wonder if all tyros in botany, who read the Monthly, know the significance of the specific names of their plants. Gray's "Manual" is very complete in meanings of generic names, but is silent as to the specific. To me it has been a great help and pleasure to study out the English equivalents of the Latin specific terms, and to endeavor to understand their application; and the knowledge thus gained has, at the same time, served to fix the name in the memory. To do this does not require any special previous acquaintance with Latin, although if something is remembered of our school-day declensions, it will not be amiss; but a good lexicon will be sufficient for practical purposes. Occasionally a Greek term is used, in which case a Greek lexicon would be needed, and this, of course, would necessitate the student's knowing the Greek alphabet—but that is easily acquired.

To one who has been lumbering his memory with a long list of dead names, which were without meaning to him, it is the beginning of a new life to know that these words have a real significance, descriptive, in most cases, of the plant. For instance, I for a long time considered *Polygonum dumetorum* a cumbersome sort of name for the climbing plant we have all seen stringing its little buckwheat-like fruit over roadside thickets. To be sure Gray's explanation of *polygonum* was clear enough, but *dumetorum* was meaningless and hard to remember; until one day it occurred to me to look it up in the Latin dictionary, It is the genitive plural of a word signifying *thicket*, and so means *of the thickets*, which exactly describes the vine's favorite haunt. So, too, *Spiræa salicifolia* (*i. e. willow-leafed*) is fairly descriptive of the willow-like leaves of the common meadow-sweet. *Eupatorium perfoliatum* (*per*, through, and *folium*, a leaf) is accurate for boneset, whose united opposite leaves seem literally pierced by the stem of the plant. *Crotalaria sagittalis* (from *sagitta*, an arrow) calls attention to the arrow-shaped stipules decurrent on the stem, which a careless observer might overlook. In *Anemonella thalictroides.* (*i. e. somewhat like thalictrum*) the specific name alludes to the marked similarity of the foliage of this plant to that of *thalictrum* or meadow-rue. *Repens*, creeping; *cirrhosus*, curly; *procumbens*, prostrate; *viscidus*, sticky; *quadrifolius*, four-leaved,—are specimens of scores of expressions used to designate species, and which are so used because they represent some characteristic feature. One that has always seemed to me particularly beautiful is *cernuus* (as in *trillium cernuum*) meaning *with bowed head*, from *cernere*, to perceive, as one who looks on the ground to see—the same root as our *discern*. Any one who knows this lovely flower will see how well its attitude is described by this word.

Of course, the appropriateness of all specific names is not so apparent as in the case of these I have just cited, but I think they will always repay study. By the way, can any one tell me the signification of *Amsonia Tabernæmontona?* The specific name would seem to mean *mountain of the tavern*, but why this variety of *Amsonia*, a clump of which is growing in our yard, should be so called, is a mystery to me, for the solution of which I should be thankful.

Shirley Hibberd.—It may be well remembered that flowers have their martyrs as well as their lovers and admirers. Mr. Shirley Hibberd, one of the most pleasant and effective writers on horticulture who have adorned its annals during the present and past generations, is said to have sacrificed his life to the cause of the Chrysanthemum in 1890, by over work in connection with the efforts that were being then made to bring the plant into popular use. At the time of his death he was editor of the "Gardeners' Magazine," which had been continuously in existence in some form or other since 1833. The magazine is still continued and edited with great ability by Mr. George Gordon.

GENERAL NOTES.

The Boston Public Garden.—It is known to be difficult to get good talent for public gardens,—not because such talent does not exist, but because those who have to engage it do not know just where to look for it when needed. Boston is one of the fortunates, and its "Public Garden," under Mr. Doogue, meets praise everywhere. A funny paragraph in a daily paper makes St. Peter tremble for the appearance of things in Paradise on the entry of a spirit familiar with this garden.

Prof. C. S. Sargent.—This eminent botanist and promoter of arboriculture has returned from the trip to Japan of which we made a note some months ago. It is pleasant to know that he regards his exploration as a remarkably successful one. He traveled nearly all over the Empire; made a very large herbarium, and brought home a number of species of trees and shrubs, of which a considerable portion has never yet been brought into cultivation. Every lover of trees, plants, and general gardening, will extend cordial welcome to the Professor on his safe return.

American Weed Seeds.—Prof. Byron D. Halsted, New Brunswick, N. J., is doing good service to cultivators by making herbariums of American weeds, which he sells in sets of 100 each at $10 per 100. Possibly nothing could so well educate the cultivator than preparations of this kind. Seeds really afford better distinguishing characteristics than any other portion of a plant; and with a common pocket lens, one could tell the name of a weed by these specimens more readily than by a large herbarium of dried plants themselves.

Dr. J. T. Stewart.—Good local herbariums are of inestimable value in the study of geographical botany. Dr. J. T. Stewart of Peoria, Illinois, has a good one of that section. Altogether the herbarium has over 3000 species, and all this has been accomplished in the time snatched from a large medical practice.

The Next Plate.—Though it was announced in the last issue that the Trailing Arbutus would be the subject of this month's illustration, it seems a little too early for even this early harbinger of Spring. It has been thought best to defer it a month, and give California with its earlier season the post of honor.

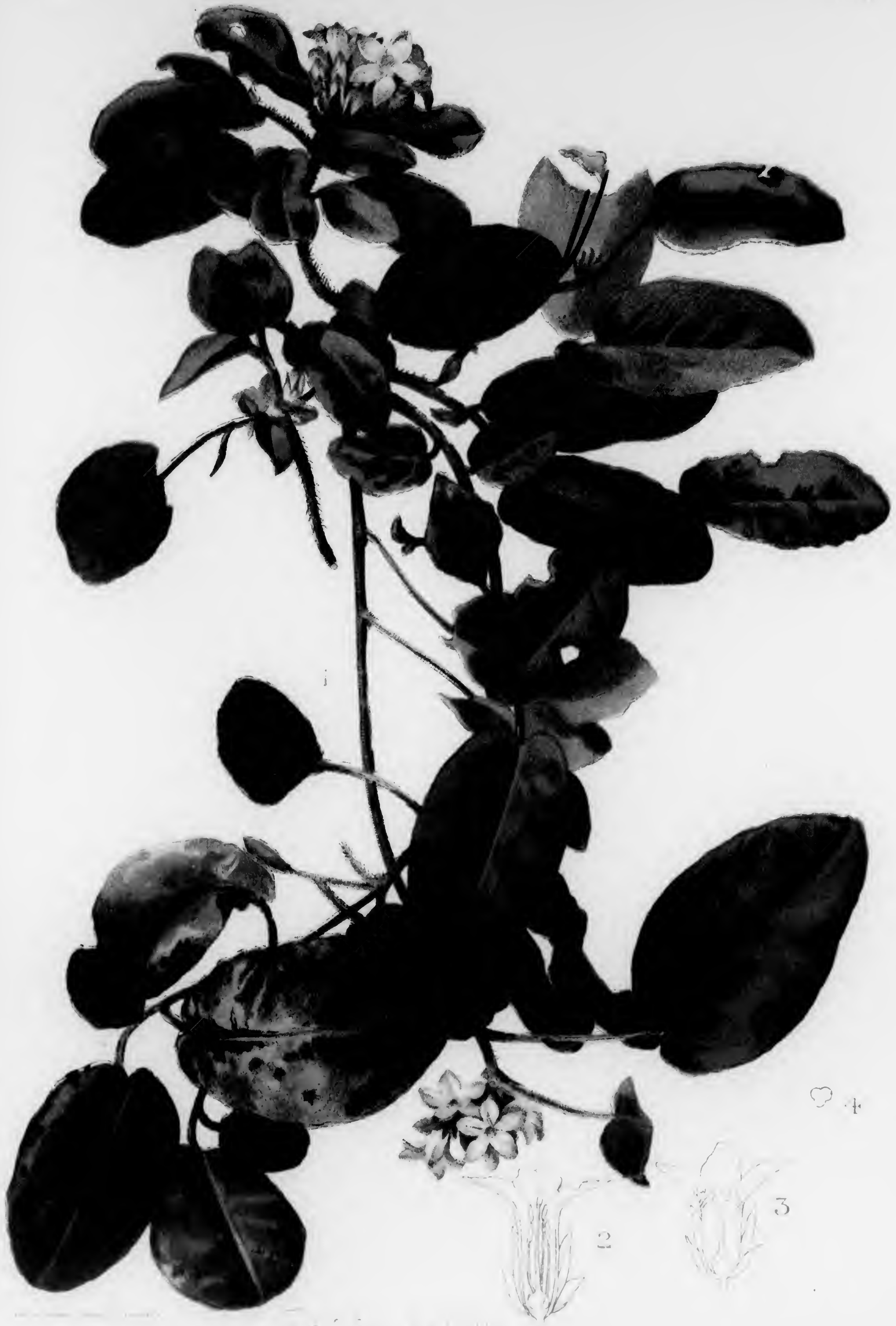
As a work of art, it is believed nothing heretofore given will excel this pretty cactus picture. The conductors at least are proud of it.

The Age of Turtles.—The age of turtles, like the age of some excellent women, will never be known. In many parts of the country boys cut their initials on the shell of the tortoise, with the date, and then watch for them in later years. At Hatboro, in Pennsylvania, one was found with L. W., 1833, cut on the shell. Mr. Levi Walton, who cut the lettering, is still living, but the slow going turtle will probably out-do him in the race of life.

Wild Flower Studies.—Most of the leading horticultural societies now encourage the knowledge of wild flowers, by offering premiums for properly named collections. At the recent annual meeting of the Hartford, Conn., Horticultural Society, Mrs. W. Seliger obtained the highest premium. She had fifty varieties in her collection, beautiful berried kinds being among them.

Splitting Wood. — The *California Fruit Grower* takes issue with Meehans' Monthly, and contends that the proper way to split a stick or log is to commence at the narrow end. It is another illustration of doctors differing. Has the *Fruit Grower's* axeman ever split an oak?

M. B. Faxon & Co.—This well known firm of Boston seedsmen have removed to Saugus, a suburb ten miles from that city.



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MAY-FLOWER.

NATURAL ORDER, ERICACEÆ.

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There are few American wild flowers that have excited alike the interest of the botanist and of those pursuing the various branches of a polite education as this one has. In a short chapter like this we shall be able to do little more than briefly allude to these points of interest.

In the earlier botanical times the plant was popularly known as ground Ivy, and Trailing Arbutus; and later Mayflower. The English Ivy is evergreen and climbing, and many things the emigrant found here, reminded him of the famous plant of the old world, and hence the numerous "ivies" which are found in the popular American language of the day. Arbutus is evidently from the resemblance of the flowers to those of the popular strawberry tree of European gardens, Arbutus Unedo, with which genus in fact the Trailing Arbutus has a relationship, both belonging to the great order *Ericaceæ*. It may be here noted that the prevailing pronunciation is incorrect, the accent should be on the first and not the second syllable. It is *Ar*-butus, not Ar-*bu*-tus. Mayflower, the more recent name, appears to have had its origin from poetical imagination, connecting with it the history of the Pilgrims who arrived from England in the Mayflower, and not as many English writers have stated because it "blooms in May." Longfellow uses it in connection with the early Pilgrims in his courtship of Miles Standish.

"So through the Plymouth woods John Alden went on his errand;
Crossing the brook at the ford, where it brawled over pebbles and shallow,
Gathering still, as he went, the May-flowers blooming around him,
Fragrant, filling the air with a strange and wonderful sweetness,
Children lost in the woods, and covered with leaves in their slumber."

Whittier also connects the plant with emigrants of the "Mayflower":

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And nursed by winter gales,
With petals of the sleeted spars,
And leaves of frozen sails!

What had she in those dreary hours,
Within her ice-rimmed bay,
In common with the wild-wood flowers,
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Above the brown leaves, dry and dead,
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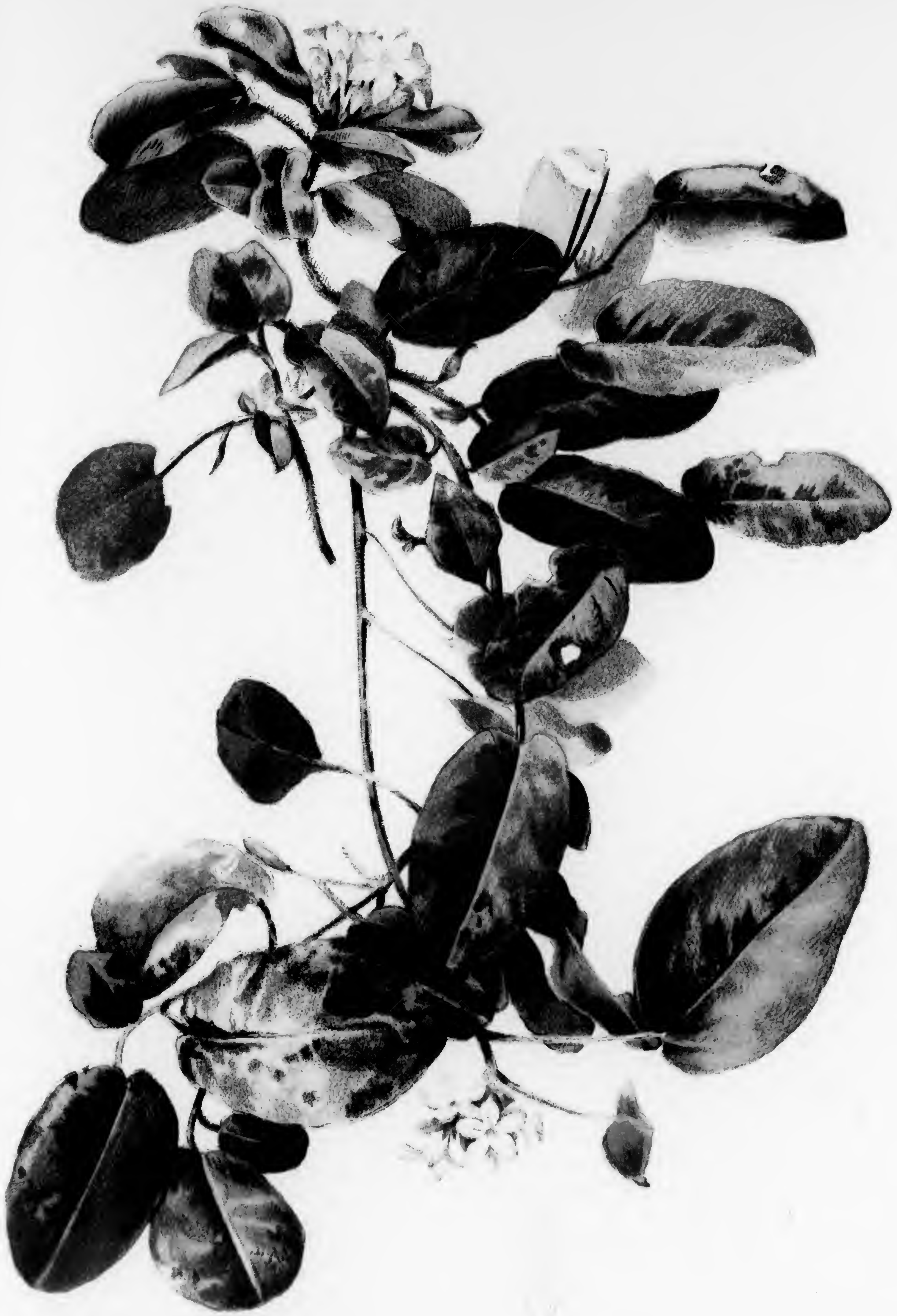
Then follows a very pretty lesson of hope for the future emigrants of the "Mayflower," when the Mayflower of Plymouth Rock bloomed so well after all the wintry storms. A very pretty essay on the "Mayflower's" Plymouth history appears in the *American Naturalist* for 1867. "The Mayflower," it reads, "has become historical, in consequence of its association with the Pilgrims, or properly with the Pilgrim ship 'Mayflower.' Its starry loveliness could hardly have failed to arrest the attention of our worthy forefathers, whose high purposes and imperative necessities left so little room for the play of sentiment." "Pretty little branches of this early gem," continues the author, "may now (April) be purchased along the thoroughfares and at the flower shops of Boston," and concludes by quoting from "a certain poet of New Bedford.



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INTENTIONAL SECOND EXPOSURE

"Dear to my heart thy rock-ribbed hills,
Thy valleys green, thy gentle rills,
Thy sunny works, where neath the snows,
The fragrant Epigæa blows;
And tempts, ere winter yields her sway,
The blooming maidens steps away,
In many a wooded warm recess,
To seek its starry loveliness."

In reference to the flowers appearing before winter has scarcely resigned her sway, Professor Chickering notes in the third volume of the same magazine "this, among the very earliest, is also the choicest gift that Flora has in New England to offer us, alike for its beauty of form and color, and its charming habit of peeping out, almost from the edge of the retreating snowdrifts,"

Where there is no snow to hide the bashful flowers, they are, as Longfellow remarks, "like the lost children in the woods, covered by the drifted autumn leaves," and this pretty point seems to have attracted the attention of most authors, and to have suggested numerous poetical associations. Conrad, whose closest acquaintance with it was on the Wissahickon near Philadelphia, says:

" 'Tis not for me sweet Epigæa trails
Its strings of pearls o'er beds of fern and moss."

Park Benjamin has some very good thoughts suggested by the blooming under old dried leaves.

"Thou comest when spring her coronal weaves,
And thou hidest thyself mid dead strewn leaves;
Where the young grass lifts its tender blade,
Thy home and thy resting place are made;
And in the spot of thy lowly birth,
Unseen, thou bloomest, in modest worth:
The richest jewel, the rarest gem
May never grow in a diadem."

Miss Gould sings in much the same vein:

"And while my hand was brushing
The seary leaves from thee,
It seemed that thou wert blushing,
To be disclosed to me.

Thou didst reward my ramble
By shining at my feet,
When, o'er brake and bramble,
I sought thy lone retreat:

As some sweet flower of pleasure
Upon our path may bloom,
Mid rocks and thorns, that measure
Our journey to the tomb."

It is well that "Mayflower" does not wholly refer to its time of flowering, for it is more generally an April than a May flower, even in New England. In 1864, the Rev. J. L. Russel, a distinguished botanist of Salem, Mass., contributed to the United States Department a table of the first appearances of many New England plants in flower. In 1837 he found the first flowers on the historic Plymouth Rock on April 29th, while at Hubbardston in the same year, they did not open till May 13. In 1841 he found it just open on the 17th of April at Chelmsford.

To the students of botany it is interesting as being up to recently, when the writer of this discovered the same peculiarities in *Andromeda Catesbæi*, the only ericaceous plant know to approach a diœcious character. In some plants the pistil is long and the plant fertile, in others the pistil is short, and the plant barren. Michaux, in 1805, observed that entire plants were often barren; but the diœcious structure does not appear to have been noted till the writer of this communicated the facts to the Academy of Natural Sciences of Philadelphia in May, 1868. In *Silliman's Journal* for July, 1876, Dr. Asa Gray places the same facts on record, having evidently forgotten the paper previously published. In the paper in the "proceedings," the great number of forms are referred to, and these variations seem to have attracted the earlier botanists. Writing to Bartram in 1743, Collinson, as Darlington has it in his Memorials, records, "I find I have three distinct species of Epigæa, this last sent me differs from the others." The passage has also an interest to the student of botanical chronology. John Mitchell, a learned Virginia botanist, did not know in 1769 that the plant had been named *Epigæa*, and proposed *Memæcylum* for it.

Most writers refer to the fragrance of the flowers, but it is a remarkable fact that if a bunch of the short styled and of the long styled flowers are gathered separately, the female form is found almost scentless.

In the sixth volume of the *American Naturalist*, Dr. Gray records the finding of a double flowered plant by Mrs. Arba Pierce.

Dr. Gray in his "Synoptical Flora of North America" locates it from "Newfoundland westward to Saskatchewan, and south to Kentucky and Florida."

EXPLANATIONS OF THE PLATE.—1. Branches from a Massachusetts plant. 2. Enlarged flower with pistil having imperfect stigma, but perfect stamens. 3. Enlarged flower with perfect pistil and no stamens. 4. Pollen grains from perfect anther.

WILD FLOWERS AND NATURE.

SPRING.

In the spring a fuller crimson comes upon the robin's breast,
In the spring the wanton lapwing gets himself another crest,
In the spring a livelier iris changes on the burnished dove,
In the spring a young man's fancy lightly turns to thoughts of love.

—TENNYSON.

CAÑA AGRA.—Mr. William Saunders of the United States Agricultural Department, and who possesses a vast fund of valuable information in regard to economic plants, kindly contributes the following:

"The Caña Agra, mentioned at page 192 of MEEHANS' MONTHLY, is a name given to the roots of *Rumex hymenosepalus* (Torr). These roots are produced in clusters like some kinds of sweet potatoes, and contain about 24 per cent. of tannin."

Prof. Trelease also says:

"Cañaigre—Monthly, 192—is *Rumex hymenosepalus*. Extensive experiments on its propagation and cultivation in the arid region, and on feasible ways of shipping its tannin in condensed form are being carried on by Professor Collingwood of the University of Tucson. The dried roots are already largely exported from the arid region of Texas."

A NEW LINARIA.—Under the name of *Linaria Reverchoni*, Prof. Wittrock the eminent Swedish botanist describes and figures a new species of Snap dragon, which he says is closely allied to *L. Clementei* of Boissier, but differs chiefly in the structure and color of the corolla, and the form and sculpture of the seeds. The general interest in the matter is that such a beautiful species should only just now be for the first time found near so old a settled place as Malaga in Spain, where it was found growing in June, 1888, in dry places on the Sierra de Miyas, by the famous collector Reverchon.

OCEAN FOAM.—Ocean Foam is the common name given on the Pacific, to *Spiræa ariæfolia*.

HYBRIDIZING DISTINCT SPECIES.—Mr. Luther Burbank sent recently a large series of photographs of the leaves of different individuals—hybrids between different species, blackberries, dewberries, and raspberries. It is a remarkable variation. Some have leaves as finely divided as ferns; others are palmate, like the horse chestnut; others have but a single leaf. It would puzzle the scientific botanist to know how to distinguish a variety from a species. Considering the ease with which even different species hybridize, it is not at all unlikely that considerable crossing is going on in nature; and when the some four hundred species of blackberries of Europe are critically examined, it is most likely that many will be found to be nothing more than natural hybrids, or variations from these hybrids. Mr. Burbank is doing an excellent work, not only in the line of scientific botany, but also for the practical fruit grower.

RHODODENDRON MAXIMUM AT HOME.—At p. 22 is an illustration of the Northern Rhododendron, *R. maximum*, as it appears in its native haunts. The picture was taken on the mountain side at Henryville, Monroe County, Pa. It seems in loving company with the trunk of a Sugar maple, while further to the right the Hemlock branches spread themselves. The density of the mass makes the forest quite dark—and the Rhododendron selects from among these darker spots, the lighter ones for its special enjoyment.

LARGE PLANE TREES.—The Buttonwood or Plane tree, divides with the Deciduous cypress the honors of having the widest trunk of any tree on the Atlantic slope of the United States. The *Garden and Forest* states that a large specimen of Eastern Plane near Constantinople is thirty-nine feet around at three feet from the ground. What is the largest specimen of the American Plane or Buttonwood that our readers know of? The conductor believes the largest he has seen were along the river lines in Kentucky.

History of Pavonia.—The Pavonia belongs to the mallow family, or, botanically, *Malvaceæ*, of which the *Hibiscus*, or common *Althæa*, is a familiar example. It was at one time classed with Hibiscus but taken therefrom by Cavanilles, a Spanish botanist, now nearly a hundred years ago, who gave it the name it bears. In his own language he distinguished it "because the fruit was divided into five sections (see Fig. 3, Dec. 1892), while in Hibiscus there was but one." Some of his contemporaries, however, objected to the division. Curtis, writing in 1799 of Cavanilles' *Pavonia cuneifolia*, remarks that he must still regard it as a Hibiscus, because he was "not partial to the multiplyings of genera, unless there be an obvious necessity for it." In the order *Malvaceæ* there is such a general resemblance running through the whole in consequence of the union of the stamens into a central column, that the necessity of dividing them wherever any fair character can be seized on is perhaps more obvious to the modern botanist than it was to Mr. Curtis, for the genus is regarded as a very good one, and now consists of several dozen good species, the greater part of them natives of the new world, Mexico and the West Indies claiming the most of them. The difficulties, however, of dividing a very natural order into genera on grounds satisfactory to botanists generally, are always great, and it has been found so in relation to the species allied to Pavonia, for nearly a dozen different names of genera appear among the synonyms of Pavonia.

Orchids in Oregon.—Species of this interesting family are not numerous in Oregon, nine species it is believed, comprise the entire list. *Cypripedium montanum*, *Epipactis gigantea*, *Goodyera Menziesii*, are the most common.

On the Equisetum or Horsetail Family.—Mr. Josiah W. Leeds, Seal P. O., Pa., contributes the following interesting sketch:

"Noticing the communication upon the textile value of the *Hibiscus* in the Monthly for the current month, I am reminded of a hint contained in a letter from a correspondent some months ago relative to a possible economic use of a species of horsetail. My correspondent, writing from Asheville, North Carolina, says:

"'A leafless Horsetail, *Equisetum lævigatum*, was brought home. This I put into one of my coat pockets alongside my lead-pencil, and in either this act, or in removing it, rubbed it against one of my finger nails. Yesterday, I *cut* my nails and they were still a little rough, and it occurred to me to try the file-like horsetail against the edges of these nails. I was surprised at the good work this natural implement did, so far superior to knife's edge or the coarse little file that usually covers a portion of one of the smaller blades of the pocket-knife. I will send for trial a section of the one stem that I brought back. Chapman gives the South but a single species of horsetail, the one above named, but this species may not make any better nail file than one or more of the five, six or eight species credited to the North by Gray.'

"My correspondent makes the further apt suggestion: 'A good plan would perhaps be to take an inch section and after opening it out flat, apply glue and lay it over a round pencil or pen-handle. Dixon, or some other pencil manufacturer, might tip his pencils with a bit of *Equisetum* and so draw attention to his make.'

"The above writer was not aware of the various uses to which the horsetail, especially the introduced European species, *hyemàle*, had been applied in the arts and in household economy. Gray says of it: 'Formerly in common use for polishing wood and metal.' It was hence commonly known as Scouring rush or Shave grass. Wood says, of the horsetail genera: 'They abound in silex, and hence are used by cabinetmakers, combmakers, etc., in polishing their work.' Dr. Darlington, in his *Flora Cestrica*, observes of the Winter Equisetum or Scouring rush: 'The cuticle of this plant abounds in siliceous earth, and its rough file-like surface is well adapted to the scouring and polishing of hard wood, metals, etc.'

"It is more than likely that the combmakers who formerly used Equisetum stems to smooth-surface and polish their fabrications, knew all about what it would do to neatly round off their finger nails. Nevertheless my correspondent's practical hint is passed on to pencil-maker Dixon, or any other manufacturer who may be disposed to give the Equisetum a fresh trial. The specimen that was sent me did admirably all that was claimed for it."

The Wild Flowers of Greenland.—For years Professor Thomas Meehan rarely missed a monthly meeting of the Germantown Horticultural Society to be present and give an extemporaneous address on the flowers, fruits and vegetables exhibited. These lectures, it is believed, did much to maintain the popularity which this society has continued to enjoy to this day. Prof. Meehan has withdrawn from all evening engagements, believing that after fifty years' teaching he is entitled to this limited rest at any rate. At the last meeting his place was filled by his eldest son, Wm. E. Meehan, one of the editors of the well known *Public Ledger*, who was a member of the Heilprin Peary Relief expedition in the Arctic region. In regard to the wild flowers of Greenland he said, after describing the journey to the North, the vegetation of Greenland could be divided into three belts: one class of vegetation beginning at Cape Farewell and ending a short distance above Godthaab, one extending to Melville Bay, and the other beyond that point. In the first belt there were found spruce trees, dwarf willows and birches; in the second the spruces disappeared, and in the third the birches. In like manner many other plants existing in the first belt disappeared in the second and third, but through them all were found the poppies, dryas, buttercups, dandelions and grass growing in profusion wherever they could gain a foothold in wet or dry places, or in the crevices of the rocks, and they were even found sometimes in the melted spots on the great inland ice itself, and often they buried old-time glaciers in a mass of green. The vegetation was due to the warm summers and the continued daylight which began in April and ended in September—the summer beginning in the middle of May and lasting until the middle of August.

Pine Cones for Fuel.—The fashionable city of Cannes has obtained considerable celebrity of late on account of the sad affairs connected with the Hotel Metropole, which is a brilliant affair about a mile from the city. A recent correspondent states that here and elsewhere in this fashionable quarter coal is a thing unknown, and that the only fuel being used is the cone of a pine, *Pinus Pinaster*. It is quite an item in the industry of that part of the world to collect the cones which are in that way used for fuel.

Plant Hairs.—It has often seemed to the writer as one of the weaknesses of some scientific speculations, that because an organ in a plant or animal is capable of certain functions, it was especially formed for that purpose and nothing else. A careful survey of nature will show that a great variety of objects can be obtained by means of the same organ, and no one would be justified in selecting any one as the one especially selected for certain purposes. In a recent able paper the author takes the ground that "the office of plant hair is to assist the epidermis in protecting the plant from natural enemies." That they do so assist sometimes may be conceded, but that this is "the" office one would hardly admit when it is noted that hairy plants abound in localities where animal enemies are least offensive. One might as well assume that "the office" of legs is to kick with, when a man is assailed; but surely locomotion is just as ably served, while the terpsichorean might contend that "the office" of legs is to dance with. Hair has many useful offices. Darwin affords good reason for supposing that glandular hair at least, absorbs nitrogen and thus aids in the nutrition of plants. On sunny places they serve to break the direct rays of the sun, and save excessive transpiration; while in malvaceous plants they permit the entrance of pollen tubes to the style without the necessity of entering by the stigma, as in so many other plants, and thus they are of immense service in aiding the flower to self-fertilization. No one can say that hair in plants is for any one special office,—nor can it be said of any organ that any one special purpose only is evident.

Seedless Fruit.—Mrs. Kellerman kindly sends samples of Persimmons exhibited at a recent meeting of the Columbus (Ohio) Horticultural Society. The tree producing them grows in the southern portion of the State. A large number of kinds of trees produce seedless fruits, of which the "currant" of commerce and the Sultana grape, are familiar examples. Just how this condition is brought about has never been fully made out by vegetable physiologists, so far as Meehans' Monthly is aware. Usually fruits are not formed in the absence of pollenization,—but whether seedless fruits are formed with or without being pollinated,—or whether fertilization occurs in part only is not clear.

HISTORY OF THE EPIGÆA.—In addition to points made in the main chapter, it may be noted that Linnaeus describes it in the volume of the *Amœnitates Academicæ* published later, but the name seems by the given extract to have been familiar to Bartram and Collinson long before. Ray says it was first sent to Europe by Dr. Vernon from Maryland. It was in those days supposed to be a Pyrola, and Clayton sent it to Gronovius as *Pyrola affinis*, and says *Planta est humillima, nunquam a terra assurgens*, that is, “a humble plant that never rises from the ground,” and it may have been from this expression of Clayton that the name Epigæa, was suggested, which is from the Greek, meaning simply “on the ground.”

Dr. Barton in his “Elements of Botany” says the plant is reported as poisonous to sheep, but this is probably part of the fictitious character given to so many ericaceous plants. In like manner it has been thought impatient of culture; but those who have put it in partial shade have had success.

RHODODENDRONS IN HEMLOCK FOREST.--SEE P. 19.

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“In our journey to the North we found no birches north of Melville Bay, but willows in abundance.

As far as I could ascertain, *Abies Orientalis*, on the west coast of Greenland, ceased a short distance above Godthaab, the capital of the southern Inspectorate of South Greenland. At Godhavn, the capital of the northern Inspectorate of South Greenland, we found willows and birches in great profusion, as we did further south. At Upernavik we also found willows and birches. At Duck Islands, near the southern entrance to Melville Bay, plenty of willows but only a few birches, and these small and sickly,—and that was the last trace of this tree that we came across. If I did not strangely overlook the birch, therefore, that plant does not exist on the Greenland coast beyond the 73rd or 74th degree of latitude.” A botanical report of the expedition is in course of preparation.

GENERAL GARDENING.

THE LANDSCAPE GARDENER.

Between the foaming jaws of the white torrent
The skilful artist draws a sudden mound;
By level long he subdivides their strength,
Stealing the waters from their rocky bed,
First to diminish what he means to conquer,—
Then, for the residue he forms a road,
Easy to keep, and painful to desert,
And guiding to the end the planner aimed at.
—*The Engineer.*

THE BOSTON PUBLIC GARDEN.—The Boston papers are calling attention to the remarkably successful management of the Public Gardens under Mr. Doogue's administration. Plants are so judiciously selected and arranged that from the earliest spring until the autumn frosts there is a continual succession of bloom; whereas, in many gardens, by reason of the want of this intelligent selection, nearly the whole spring and early summer are left without anything particularly attractive. And another feature of the Boston public gardening is that the style and material is so changed from year to year as to avoid anything like monotony in the seasonal successions. The past season, one of the special features was the selection and arrangement of plants for the so-called Tropical Garden. With the bright colors of these tropical growths, evergreens have been so finely blended that the particular colors and tints of the exotic have been brought out in a rare and unique manner, presenting pictures of grand coloring as well as of artistic design. A particular feature this year has been the introduction of Asters, in order to make a specialty of the later fall season.

NEW PARKS FOR CLEVELAND, OHIO.—By the will of Cleveland's wealthy merchant, W. J. Gordon, who died recently, a magnificent park comes into possession of the city. It was laid out expressly with the purpose of making it a beautiful place of public resort,—and which now becomes a fact accomplished.

The valuable Wade Park of four acres has also been made over to the city.

BLUE HYDRANGEAS.—Mrs. S. B. Strout, of Evergreen, Alabama, referring to recent paragraphs in MEEHANS' MONTHLY about Blue Hydrangeas, writes:

“A lady here has an enormous blue hydrangea. She gave a cutting to another lady, and from this second lady I obtained mine.

When mine blossomed, it was pink. I spoke to the first mentioned lady about it, and she told me the plant from which she obtained hers had pink blooms, but her flower garden was formerly the site of a blacksmith shop, and she thought the iron in the soil had changed the color,

I procured some sweepings of a forge, and with my trowel dug them into the soil about the plant; and what was my astonishment to see in a few days the pink blossoms changing to a dingy blue, or purple rather. Since then the blossoms have been blue.”

The only thing clear about the whole question is that while it is well known that the colored calices which form the “flowers” of the Hydrangea, are leaves that have been modified in order to form these calices,—in the blue stage there is much more vegetative vigor than when in the rosy stage. The only way, then, in which soil can effect the question, would lie in the direction of vegetative vigor. A plant or branch in a high state of vegetative vigor is more likely to have blue flowers, than when vegetative vigor is in greater check. Iron may check vigor.

FUNGUS GROWTHS.—For a number of years writers even of scientific renown used the expression “fungoid growth” when referring to the small microscopic funguses that are found on vegetation. Prof. Riley first objected to this abuse of the word fungoid, which simply means having a likeness or resemblance to fungus, when the organizations are actually fungus growths. Since Prof. Riley called attention to this abuse of the word, it has been in a measure dropped, but yet it continues to be used by many writers of eminence.

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INTENTIONAL SECOND EXPOSURE

THE MOREL.—Since the paper on the Morel in MEEHANS' MONTHLY appeared, we have noted an excellent chapter on the same subject in the *Country Gentlemen*, from the pen of the eminent mycologist, Prof. C. H. Peck, of Albany, which gives additional information concerning this interesting group of fungi. The name Morel is said to be of German derivation. They grow in America from two to four inches in height, larger under favorable conditions. According to Prof. Peck they are rather fragile and tender when fresh. At Albany he says they are found during May and early in June. He has not found them later than June, and they are most abundant in wet weather. They grow in any kind of soil, but prefer certain kinds of trees.

The one we figured, *Morchella esculenta*, is most often found near pine, or ash trees. Six different species have been found in New York State, all of which are edible, and no species of the genus is positively known to be dangerous. They are cooked as ordinary mushrooms, but should be fried in butter and duly seasoned, as they have not as much juice as the ordinary mushroom. Dried Morels are recommended as a flavoring ingredient in soups and broth. Though they are about equally good, it may be useful to know how to distinguish them, for this purpose we give below the key as furnished by Prof. Peck.

Margin of the cap united to the stem :
Cap rounded, egg-shaped or oval, *M. esculenta.*
Cap narrowly oblong or cylindrical, *M. deliciosa.*
Cap narrowly conical or oblong-conical :
  Much broader at base than stem, *M. conica.*
  Scarcely broader at base than stem, *M. augusticeps.*
Margin of the cap free from the stem :
Cap free half its length, spores eight in a sack, *M. semilibera.*
Cap free to the top of the stem, spores two in a sack, *M. bispora.*

CORN STALK BEAN POLES.—A correspondent suggests that the party who recommended to plant Lima beans and corn together, so that the corn stalk might be a substitute for the regular bean pole, is probably one of those ingenious writers that abound in horticultural literature, who think their mission is to think of things for other people to try. Our correspondent says that thirty years ago when his horticultural experience was young, he read the same advice and then tried it. The result was that he had to get poles to sustain the corn stalks!

HARDINESS OF EVERGREENS.—It is not the low temperature which destroys evergreens so much as it is light. As a rule evergreens love shade. The same kind under the shade of trees, although that shade may be quite partial, will get through a severe winter without the slightest injury, when one exposed to the sun will loose all its leaves and frequently be entirely destroyed. This is particularly noticed in the case of evergeen climbing vines, and notably the English Ivy. Throughout most of the Eastern States this beautiful and historically valued plant never suffers in the slighest when grown on a northern wall where it gets no sun in the winter time, while on the south side of the same building, it is usually killed with the thermometer scarcely at zero. The same plant suffered to grow up trunks of trees where it is simply shaded by nothing but the bare branches in the winter time, will pass through the severest winters uninjured. Even Rhododendrons, hardy as they are known to be, suffer more or less when exposed to the full sun in winter, and those who desire to grow them with the greatest success usually cover with some sort of light material during the winter season. It is not absolutely necessary to success with Rhododendrons, but adds very much to the beauty and vigor of the plants.

THE ENGLISH GOOSEBERRY.—The superior character of the English gooseberry in size and flavor is well known. Unfortunately the plant does not thrive well in high temperatures. In Canada they are nearly as successful as they are in England. Those who desire to cultivate them successfully, in most parts of the United States, have to set the plants in positions where the sun has no great power and the soil is comparatively moist. Where in the full sun, they can be grown fairly well by having some material under the bushes, which will prevent the soil from becoming very warm.

ACER NIKKŒNSE.—This is a Japanese species of maple, not yet introduced into cultivation, and was found by Professor Sargent, in his recent exploration in Japan, to be more brilliant in autumn than any of the other species of that country. It is hoped that the Professor's labors will result in its introduction to American gardens.

GRASS FOR LAWNS.—Where the locality desirable for a lawn is naturally free from weeds, the modern suggestion of making it by planting patches of one particular kind, which will run together in a few months, is particularly desirable. Nothing can be more beautiful than a lawn which is wholly made up of one species only. For small gardens, especially where the new plantation can be hand-weeded during the summer, it is the best of all methods. No lawn made of grass seeds will be confined strictly to one kind, and on account of the different shades of green in the grass will always have a more or less patchy appearance. Those who supply mixed lawn grass seeds usually keep this in mind, and endeavor to get their kinds so generally alike in tint of green as to avoid this objection. One advantage of the mixed system is that one can rarely tell by the description of a customer what particular kind of grass will thrive to best advantage. A mixture is, therefore, likely to best serve the purpose, in this that the one which is the most suitable will eventually crowd out those not so well adapted to the soil and circumstances. We have seen a lawn made of mixed grasses which had to be secured under the shade of large trees, eventually become wholly occupied by the Sheep Fescue. In the course of a few years every other kind was crowded out, and this particular species alone occupied the land.

WILD GARDENS.—Mr. Edward J. Canning kindly contributes the following note :

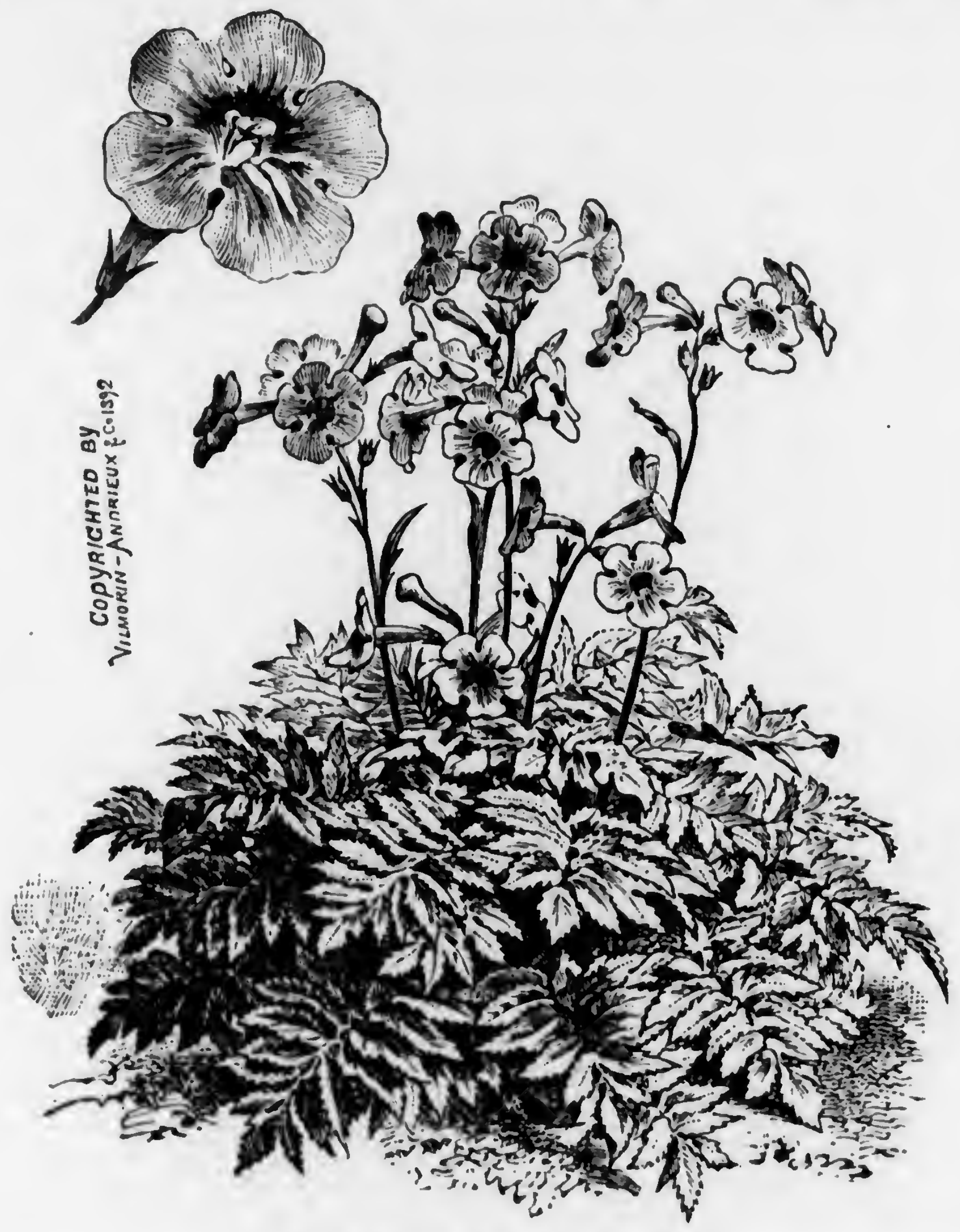
"Around country residences may often be found waste ground neither suited to a lawn nor to vegetables. To any having such I would suggest turning it into a "wild garden." If covered with grass and rocks, so much the better, as there are so many beautiful hardy plants suited to such conditions. The planting should be irregular—the object being to imitate nature as much as possible. Among many plants adapted are *Polygonum cuspidatum* (or *Sieboldii*, as it is also called), which may be used either as a screen or background. Clumps of *Digitalis purpurea* and *alba*, *Rudbeckia subtomentosa* and *R. incisa*, *Boltonia asteroides*, and clumps of the best varieties of Asters, clumps of *Funkia ovata*, are good, and among these *Lilium trigrinum*, also *Lilium Canadense*. *L. Candidum*, *L. bulbiferum* and *L. speciosum roseum*, should be set. In shaded positions, Lily of the Valley, Trilliums and Snowdrops are useful, and under trees Crocus, Aconites, Scillas do well. Narcissus and Ornithogalums thrive in open spaces among the grass. Around rocks or tree stumps, climbing Roses, Honeysuckles, the beautiful *Hydrangea scandens* and *Forsythia suspensa*, have a pretty effect. If the rocks should be partially buried plant on them *Sedum acre* or *Veronica rupestris;* the latter is well suited for hanging over a ledge of rock forming a perfect picture when in flower. *Arabis albida* is also a plant peculiarly adapted for rock work. Many other plants will also suggest themselves. For moist and shaded positions plant hardy Ferns. The taller plants should be planted in irregular clumps ; the bulbs and smaller plants may be more scattered. If a ravine should run through the garden, the beauty may be enhanced by planting aquatic and half aquatic plants.

A judicious selection will give a succession of flowers the whole season, and if carefully planted and well arranged, will be a constant source of pleasure."

ABIES FRAZERI.—This is probably one of the handsomest of all the hardy Firs ; and yet, strange to say, a specimen in cultivation is rarely met with. The reason for this seems to be that for a number of years past seeds sent to the old world for *Abies Frazeri* were simply of forms of the common Balsam Fir. The true Frazer Fir seems to be confined to the mountains of North Carolina, wherein Fraser originally discovered it. Two of our advertizers, Kelsey & Co., and Russell Bros., are doing great service to lovers of our coniferæ by introducing the genuine plant into cultivation.

GRAFTED ROSES.—Roses are usually budded on a stock known to the trade as the Manetti, which is a strong, vigorous and healthy grower. If parties who have these budded roses understand the management, they are far superior than when growing on their own roots. The chief care required is to see that no suckers or sprouts are ever allowed to come out from the stock. Where these are permitted, the grafted portion soon dies. Those who can give grafted roses their proper care, do well to plant them. Those who cannot do so, but have to trust the others, had better have roses on their own roots.

INCARVILLEA DELAVÉYI.—It is difficult to imagine a Trumpet flower, as plants of the bignonaceous order are termed, as any thing than a tree or woody climbing vine; but in the genus *Incarvillea* we have an herbaceous family, with flowers quite as beautiful as any Trumpet vine could give. The plant was first made known nearly a hundred years ago by a zealous missionary botanist, Father Incarville, a Jesuit priest in China. But they have only recently been obtained for cultivation. Our knowledge of the plant is through the well known house Vilmorin, Andrieux & Co, of Paris. An interesting feature of the flower is that the cloven stigma, when touched, closes like the leaves of the sensitive plant.



INCARVILLEA DELAVÉYI.

HYDRANGEA CULTURE.—Mr. R. G. Potter, of Kingston, Rhode Island, contributes the following valuable note:

"I have never seen any article in magazines about keeping Hydrangeas in the winter as they are kept here. A gardener at the Pier has for years had the finest I have ever seen. He digs a hole late in the season, puts the plants in, covers with earth and then sod. One this year had five hundred flowers. Others kept in same way had one 190, another 164 flowers. I have a great many, but do not cut them down as they do, preferring to see the flowers droop.

The gardener's name is Charles Yost, Narragansett Pier."

It may be added, that a covering with earth is one of the best methods of preserving half hardy woody plants during the winter, and the good gardener often practices it with roses, grape vines, raspberries, cabbage and other things,—but it has not been practiced before for Hydrangeas, so far as records show. No doubt magnificent specimens can be had by following Mr. Yost's method.

THE PEPPER TREE OF CALIFORNIA.—Visitors to California regard this tree with admiration, and have a feeling of regret that it is not hardy in the northeastern states. Its botanical name is *Schinus Molle.* It belongs to the same family, with the *Rhus*, to which our poison vines are referred. Strange to say, the tree is regarded as a nuisance by Californians. It is said to grow so rapidly that the roots push up pavements in every direction,—and that wherever even the smallest branch is broken, a gummy substance drops, ruining everything it falls on. It is said that so great is the annoyance caused in this way, that some of the cities in southern California compel the owners to cut off every branch that spreads over sidewalks or roadways. The pollen is collected by bees, but the odor is so strong as to unfit the honey in the hive for human use. The Blue Gums, that is to say, the *Eucalyptus*, are said to be preferable for street trees in every way.

WINTER FLOWERING CARNATIONS.—The Bulletin of the Horticultural Society of Tuscany gives a colored plate of seven different forms of winter blooming carnations, which it considers a vast improvement on the varieties formerly in cultivation; but we should judge by the appearance of these forms, that America is far in advance in the production of improved varieties—certainly a large number of American varieties are much more beautiful and distinct than these illustrated in the Bulletin. Altogether we think that American carnation growers may congratulate themselves on having taken the lead of the whole world in the improvement of this beautiful class of flowers.

HISTORY OF THE FUCHSIA.—It is said that the first Fuchsia was introduced into England by a sailor from Chili, in 1746. A plant from this was sold to an English nurseryman for over $400. Between 1830 and 1840, hybrids became rather common. The modern race of Fuchsias dates from the introduction of *Fuchsia fulgens.* The white corolla varieties appeared in 1855. The raiser of them dying about the time that they were produced, left no knowledge as to how he obtained them. There are a large number of species in South America, many of them in many respects far more beautiful than the hybrid varieties, but not having been pushed by florists, they have, in a great measure, gone out of cultivation.

EDGING PLANTS.—Many persons do not like box-edging, and yet desire bordering of some kind. Mr. Geo. Woolson of Passaic, N. J., find the following very useful in different situations:

Achillea tomentosa, Anthemis nobilis, Arenaria verna, Aubrietias in sorts, Cerastium Bierbesteini, Cerastium Boissieri, Cerastium tomentosum, Dianthus deltoides, Herniaria glabra, Lysimachia Nummularia, Mitchella repens, Œnothera speciosa, Phloxes, Moss Pinks in sorts, Pyrethrum Tchihatchewi, Sedum acre, Stellaria graminea aurea, Stellaria Holostea, Thymus lanuginosus, Thymus montanus albus, Tunica Saxifraga, Veronica repens, Veronica cercæoides, Vinca minor.

MAGNOLIA WATSONI.—A large number of the trees and shrubs of Japan have been put in cultivation through the energy of Parsons, Sons & Co., of Flushing, N.Y. Among these, several beautiful Magnolias. One which was introduced by them, through Mr. Thomas Hogg, in 1875, was supposed by them to be the *Magnolia parviflora*, long ago described by botanists who have made Japan plants a study. Sir Joseph Hooker contested that this was not parviflora, but an entirely new species, which he has named *Magnolia Watsoni.* According to this statement of Dr. Hooker's, the true *Magnolia parviflora* has not yet been introduced. It may be here noted that Mr. Hogg who brought so many beautiful plants in addition to this, died on December 30th.

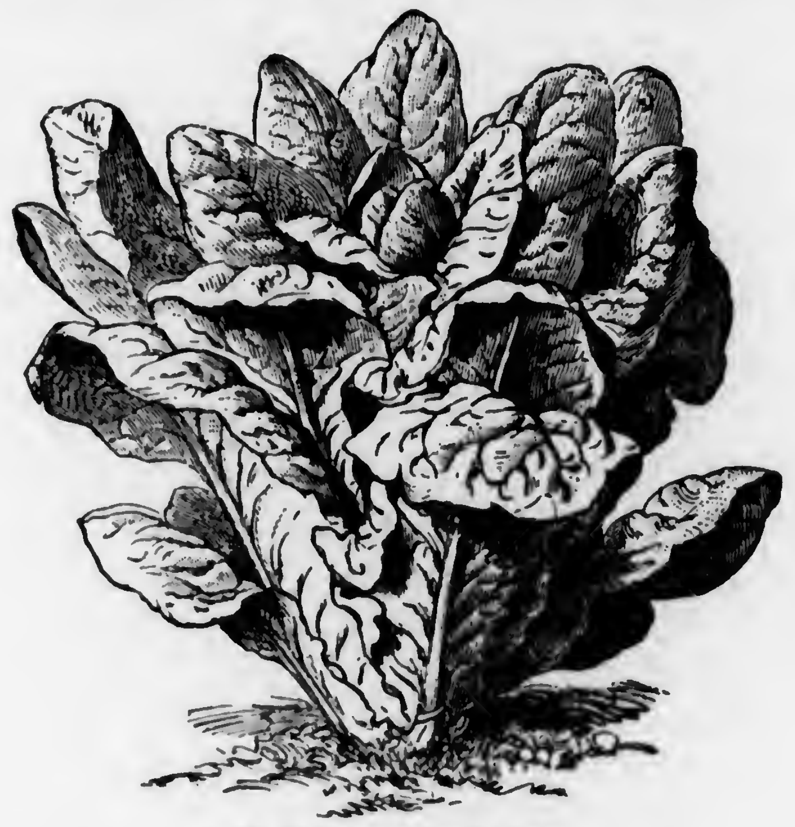
FRUITS AND VEGETABLES.

GROUND BLANCHING OF SEA KALE.—MEEHANS' MONTHLY recently called attention to the neglect in America of this delicious vegetable, and gave some suggestions as to methods of culture. This brings the following excellent note from one of the readers of the magzine, Miss L. Shackleton, Lucan, Ireland, where the plant is intelligently grown:

"E. S. Delamer, in *The Kitchen Garden*, writes: 'Some time in December, not too soon, when the foot stalks of the leaves have fairly separated themselves from the crown of the plants, heap over each about a quarter of a peck of sea sand or wood ashes, or those from turf, if not to be had, any light, unmanured soil will do. Then earth up the plants from a trench dug along the space between the rows, deep and not too near them to avoid approaching the roots, exactly as if you were earthing up celery, only that no leaves appear above the top of the ridge. The earth should be heaped up till it is eighteen inches or two feet above the crowns of the plants, and then regularly rounded like a donkey's back, flatted down on the sides with the spade and made smooth and neat.' Mr. Delamer cautions against blanching and protecting with leaves which, he says, often heat and ferment, giving the sea kale an unpleasant taste. We treat it as he recommends above, except that we use *coal* ashes."

VEGETABLE CURIOSITIES.—Some very pleasant surprises for children may be obtained by getting fruits to grow inside of glass bottles. Some, especially of the cucumber family, can be inserted into the narrow mouths of bottles while young, the bottles attached to the branch, and after full growth, it will be a mystery how these fruits got inside the bottles or jars. Besides the pleasant surprises many a useful lesson on plant growth can be furnished by these tests. It is stated that King George the Third, of England, in the earlier stages of the insanity which subsequently overtook him, used to express his surprise to those who were dining with him, as to how the apple got inside of the dumpling; but with these fruits in glass jars, the surprises to even sane people are quite as interesting to intelligent people as the apple dumpling was to this unfortunate monarch.

LETTUCE.—In former times there were two popular classes of lettuce, one known as the Cos class, and the other as the Cabbage. The one requires to have the leaves tied up when the blanching process takes place in the centre; the other the head becomes pale in the interior naturally; or, as one might say, of its own accord. Of late years the Cos class has nearly gone out of use, the Cabbage being the kind almost usually seen. Those who know a good thing, however, when they see it, have still a tender regard for the memory of the old Cos kind. It is far superior to the generality of lettuce such as we generally get. The reason for comparative disappearance is probably the extra labor envolved by the tying process. Man seems to have come to the opinion that in every line he has but a short time to live and, therefore, that which is the easiest accomplished, although accomplished indifferently, is the wisest line of industry to pursue.



A COS LETTUCE.

But is it?

It is just possible that many do not know the difference between the two. It will therefore be instructive to take from Vilmorin's great work on vegetables, "*Les Plantes Potageres*," sketches of each kind. It is there that the Cos, as it is called in English literature, is known as the Roman Lettuce, while the Head Lettuce, (see p. 29), is described as *Laitue Pommé*. It is difficult to believe that two such distincts forms originated from the one wild species, but Vilmorin thinks there is no doubt of it. These authors also believe that the native country is unknown, though possibly it was Central Asia. It has been under cultivation prior to modern history.

HORSE-RADISH. — Of late years it has become the practice to buy horse-radish already grated for table use; and the result has been that a large portion of it is adulterated with cabbage stalks and some chemical substance to give it the hot taste of the genuine article. This renders the cultivation of horse-radish by amateurs, who want the proper article, more desirable than ever. It is propagated by cutting roots into sections of about an inch in length and planting these pieces where it is desirable to have a plantation made. One very good method is to make a hole with a crow-bar and drop the pieces of root into the hole, so that it is a foot or so beneath the surface,—the new growth never has any difficulty in finding its way to the surface,—and that new growth is what makes the future root. One has then a clean, straight root when ready for use, which is much preferable for culinary purposes to the stumpy looking affairs sometimes seen in markets. The soil cannot be too rich for this vegetable,—and if damp and cool so much the better.

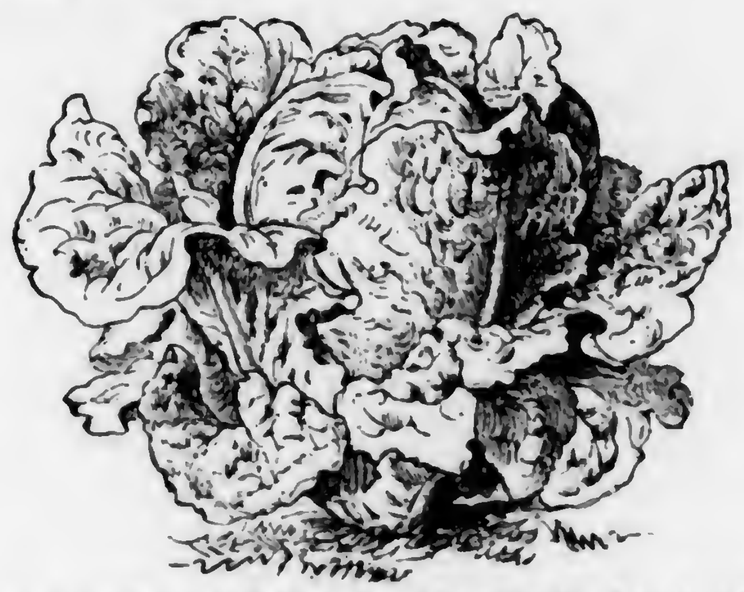
PLANTING BLACKBERRIES AND RASPBERRIES. — Probably more complaints in relation to plants dying after transplanting are heard in connection with the raspberry and blackberry than with any other fruit. In almost all cases the cane should be cut nearly to the ground when planted, and the plant should not be set more than a few inches under the surface; if planted deep the buds will rot before the young sprouts get to the surface. In shallow planting it is, of course, very desirable that the earth should be hammered in very tightly around the plants at transplanting.

FIGS IN CALIFORNIA.—Mr. Charles H. Shinn states that this is likely to be one of the most productive fruit culture industries of California,—that they thrive well in much dryer ground than almost any other tree would stand. At the Foothill station, near Jackson, in Amador county, they are found to endure twenty degrees of temperature without being in any way injured. Over fifty-one varieties of figs are now being tested at that station, and kinds known as Brown Ischia, Constantine, Monacia, Bianca and White Adriatic are named as doing remarkably well there.

TOMATOES IN ENGLAND,—A recent issue of the *Gardeners' Chronicle* states that although the tomato was introduced into England as far back as the sixteenth century, and notwithstanding it has been a common and popular article of food in the United States for nearly fifty years, it is only during the past ten years that they have come into general use in Great Britain. But popular public favor once started in that direction, the increase in consumption has been enormous, and it is believed at the present time over a million square feet of glass surface is devoted to their cultivation, the fruit bringing from eight to sixteen cents a pound, and occasionally going up as high as fifty cents in the middle of winter. In the Channel Islands, where the climate is much milder, tomato culture has developed amazingly for the purpose of supplying the London market. The value of the imports from these Islands the past year amounted to $250,000. France and Spain are also going into their cultivation for the purpose of supplying the immense demand arising for them in Great Britain. The *Chronicle* states, "From present appearances, in ten years the consumption will be five times what it is to-day," and they are looking forward to America to help them out. Strange to say, no attempt seems to have been made by American growers to profit by this new condition of things in England, although it must be evident that tomatoes could very readily be carried there, from the fact that passengers on board of our line steamers have the fresh American article on their tables all the way across the Atlantic until they reach the docks in Liverpool harbor, being quite as good and fresh after ten days' travel as they were on the first day they were shipped.

CHENANGO STRAWBERRY APPLE.—A report of the Hartford Co., (Conn.) Horticultural Society speaks in terms of praise of a set of the beautiful apple known as the Chenango Strawberry. Though one of the most beautiful and delicious of apples, it is rarely seen in market through not possessing those carrying peculiarities which give value to inferior kinds. Nurserymen keep in stock only those generally asked for, and these are usually kinds that bring back a money return to the market grower, with whom this is naturally the first consideration.

A HEDGE OF HELIOTROPE.—*The Los Angeles Express* states that Mrs. Shepherd, of whose good work in gardening MEEHANS' MONTHLY has before spoken, has a hedge 200 feet long, consisting solely of heliotrope. Low posts were first placed and wire stretched across in order to support the small plants of the heliotrope which were planted out five years ago; now they are six feet above the walk, drooping down and lining the promenade with the fragrant masses of purple, lavender and white blossoms. The flowers are said to be great attractions to humming birds, butterflies and insects. It may be noted here that the heliotrope is a native of Peru, and that the vernacular name with the Peruvians is Vanilla,—and on account of the identity in the aroma between this fragrance and that of the fruit of the celebrated orchid, the name has been transferred to this particular fruit, which is known in commerce as the Vanilla bean.



A CABBAGE HEADED LETTUCE--SEE P. 28

SOWING CABBAGE.—As a general thing the best early cabbage comes from plants that are raised from seed in the fall, and somewhat protected; but there is always a chance of its running to seed if sowed early in the fall, or if the winters are open and mild. Very excellent results are obtained by sowing seeds in a slight hot-bed hot-house in February or March, and planted out. If the soil is good and rich such cabbages are more tender and in every way better than those raised from fall seeds.

PLANTING ASPARAGUS.—It is said that whether the white part of asparagus be soft or stringy depends in a great measure on the depth of planting; the farther it has to grow beneath the ground the more stringy the sprouts become. Tender, white asparagus is rather the effect of blanching than of mere growth.

BIOGRAPHY AND LITERATURE.

"SELF-PRAISE IS NO PRAISE."

All summer the breath of the roses around
Is naught but a delicate, passionate sound ;
And when from a trellis, in holiday places,
They croon and cajole, with their slumberous faces,
A lad in the lane must slacken his paces.

Fragrance of these is a voice in a bower ,
But low by the wall is my odorless flower,
So pure, so controlled, not a fume is above her,
That poets or bees should delay there and hover ;
For she is a silence, and therefore I love her.

Louise Imogen Guiney.

Professor Angelo Heilprin.—This eminent scientific man was born in Hungary, but has been connected with the Academy of Natural Sciences of Philadelphia for some years past. In scientific directories he is classed as a geologist, but as in the case of Prof. Agassiz, Prof. Leidy, and other great names, it would be difficult to find a branch of science in which he does not take an intelligent interest. The Philadelphia Academy owes much of its fame and its importance to the great reputation so many of its members have acquired for it, and in more recent years a large share is due to the labors of Prof. Heilprin. A number of years ago it was determined to build a magnificent museum and lecture hall adjoining the present one, but all attempts to get the Legislature to see its duty failed. Prof. Heilprin's fame had reached the Legislature, and when he went before it and pleaded, it voted $50,000. At the last session he repeated his mission and obtained $50,000 more. As an explorer his courage and leadership of a small party across the hitherto almost unknown territory of Yucatan brought rich results to the academy. As the leader in the escort party to Peary's winter quarters and safe return he won golden opinions. And when, about a year ago, fears were expressed over the whole Union, that Peary had met with disaster, he volunteered to lead a search party, the wonderful success of which is fresh in the minds of all. Few members of the academy have brought more renown to the institution than Prof. Heilprin, and Philadelphians generally are very proud of the young Professor.

Clark, the Famous Explorer.—It must be true that if it is worth honoring a person at all, it is important that he should be honored under his own name, and not under that of some other. Having to refer to the famous explorers Lewis and Clarke, as generally written, Meehans' Monthly followed *Lippincott's Biographical Dictionary*, and wrote it Clark. The propriety of this has been questioned. The matter was referred to Dr. Elliott Coues. His reply settles the question :—

"In reply to your question : I am in position to speak positively. The name of the famous explorer with Lewis was Clark, not Clarke. My authorities are : 1. A verbatim copy of family Bible records of the Clark family, going back to 1724—not an *e* in one of the names. 2. Many autograph letters of Clark with his signature, which I have examined—invariably "Wm. Clark."—no sign of an *e*. He wrote the *k* large, like a capital, and with a long flourishing lower loop, but never a mark that could be mistaken for an *e*. 3. Many official and other letters addressed to him, always Clark. 4. Copies of various commissions issued to him by at least three presidents of the United States—invariably Clark. 5. Copies of letters to him from Nicholas Biddle, editor of the famous "Travels," always Clark. 6. Copies of legal, commercial, etc., notices, advertisements, etc., in early newspapers of St. Louis—always Clark. 7. Repeated notices in Billon's "Annals of St. Louis"—always Clark. 8. Letters to me from his only surviving son, Jefferson K. Clark. 9. Various other authentic sources of information.

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So it has turned out that a man whose family name was Clark, who was Ensign Clark, Lieutenant Clark, Captain Clark, General Clark, and Governor Clark—who was William Clark in all commercial, legal and official functions, who was doubtless "Bill Clark" to his cronies, has passed into literature and history as a Clarke. Pursh was right in naming the genus *Clarkia* (not Clarkea)."

Isaac C. Martindale.—Natural history has suffered few severer losses than by the death of the banker-botanist Isaac C. Martindale of Camden, New Jersey, which occurred suddenly by apoplexy, on the 3rd of January. He was as universally beloved for his personal character, as held in high esteem for his scientific eminence. He was wholly a self-made man, having been raised on a farm in Byberry, near Philadelphia, where he was born on July 15, 1842. While a lad at the plough, he would stop to track birds to their homes in order to know all about them and books that would tell of them were his familiar friends. By self-study he acquired a fair education and became a clerk in a bank. Here, as elsewhere, he strived for excellence, and was promoted from a junior clerk to the highest office, that of cashier. By his devotion to the interest of the bank, his health broke down, and he was granted a vacation to Europe. It was here that his fondness for botany became fixed. Brooding over some trouble and wondering what use he was in the world, while sitting to rest in Switzerland, his eye fell on a little plant, struggling in the cleft of a rock, without any soil that was visible, and yet in perfect health and blooming beautyfully. Accustomed to reading lessons from nature, he took it as a hint to himself. If in the midst of such disheartening surroundings such beauty and perfection could result, surely, there was yet a place for him in the world ! He made collections of plants from that time. His herbarium became one of the finest in America, and his botanical correspondence was world-wide. His young son, now about thirteen, developed, when quite a lad, a taste for insect study, and during the last few years the father was led by the child's taste into similar pursuits, and he was fast becoming as great an authority in the entomological world, as he was in botany. He was vice-president of the Entomological Society of Philadelphia at his death, treasurer of the Academy of Natural Sciences, corresponding secretary of its botanical section, a member of the American Philosophical Society, Fellow of the American Association for the Advancement of Science,—besides a member of many other useful institutions of similar import. The portrait is from a photo taken in 1879.

ISAAC C. MARTINDALE.

Willkomm's Herbarium.—Mr. Thomas Hanbury has presented to the Botanical Institute at Genoa the very rich collection of vascular plants made by the late Prof. Willkomm, of Prague. It comprises as many as 14,472 species, the greater number being European or from the adjacent districts of Asia and Africa. It is especially rich in plants of the Spanish Peninsula, and includes most of Willkomm's original type specimens. The herbarium of that Institution is one already much consulted by botanists.

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The wrong spelling with an *e* seems to have first come into vogue in 1807, in Gass's "Journal," where it is invariably Clarke, as it is in all the four later editions of Gass. Then the regular authentic edition of the "Travels," Philadelphia, 1847, has Clarke throughout the text, but curiously, Clark on the title page. So, also, Clarke in later editions, following suit of the *princeps*.

So it has turned out that a man whose family name was Clark, who was Ensign Clark, Lieutenant Clark, Captain Clark, General Clark, and Governor Clark—who was William Clark in all commercial, legal and official functions, who was doubtless "Bill Clark" to his cronies, has passed into literature and history as a Clarke. Pursh was right in naming the genus *Clarkia* (not Clarkea)."

ISAAC C. MARTINDALE.—Natural history has suffered few severer losses than by the death of the banker-botanist Isaac C. Martindale of Camden, New Jersey, which occurred suddenly by apoplexy, on the 3rd of January. He was as universally beloved for his personal character, as held in high esteem for his scientific eminence. He was wholly a self-made man, having been raised on a farm in Byberry, near Philadelphia, where he was born on July 15, 1842. While a lad at the plough, he would stop to track birds to their homes in order to know all about them and books that would tell of them were his familiar friends. By self-study he acquired a fair education and became a clerk in a bank. Here, as elsewhere, he strived for excellence, and was promoted from a junior clerk to the highest office, that of cashier. By his devotion to the interest of the bank, his health broke down, and he was granted a vacation to Europe. It was here that his fondness for botany became fixed. Brooding over some trouble and wondering what use he was in the world, while sitting to rest in Switzerland, his eye fell on a little plant, struggling in the cleft of a rock, without any soil that was visible, and yet in perfect health and blooming beautyfully. Accustomed to reading lessons from nature, he took it as a hint to himself. If in the midst of such disheartening surroundings such beauty and perfection could result, surely, there was yet a place for him in the world! He made collections of plants from that time. His herbarium became one of the finest in America, and his botanical correspondence was world-wide. His young son, now about thirteen, developed, when quite a lad, a taste for insect study, and during the last few years the father was led by the child's taste into similar pursuits, and he was fast becoming as great an authority in the entomological world, as he was in botany. He was vice-president of the Entomological Society of Philadelphia at his death, treasurer of the Academy of Natural Sciences, corresponding secretary of its botanical section, a member of the American Philosophical Society, Fellow of the American Association for the Advancement of Science,—besides a member of many other useful institutions of similar import. The portrait is from a photo taken in 1879.

ISAAC C. MARTINDALE.

WILLKOMM'S HERBARIUM.—Mr. Thomas Hanbury has presented to the Botanical Institute at Genoa the very rich collection of vascular plants made by the late Prof. Willkomm, of Prague. It comprises as many as 14,472 species, the greater number being European or from the adjacent districts of Asia and Africa. It is especially rich in plants of the Spanish Peninsula, and includes most of Willkomm's original type specimens. The herbarium of that Institution is one already much consulted by botanists.

INTENTIONAL SECOND EXPOSURE

GENERAL NOTES.

MEEHANS' MONTHLY FOR 1893.—The large number of appreciative letters while renewing subscriptions has about overwhelmed the publishers, who can only take this poor method of returning thanks. Universal surprise is expressed that MEEHANS' MONTHLY can give a plate botanically accurate and of such a superior style of art, with so much gardening and matters of natural history, for $2 a year. It could not be done only for the hope of an immense subscription list some day. The publishers have faith that, as time rolls on, every person who has a taste for art or science—outside of the mere love of gardening—will feel compelled to have it as a work of reference in their libraries. While we can yet only speak of subscribers in the thousands, we hope for the hundred thousands one of these days.

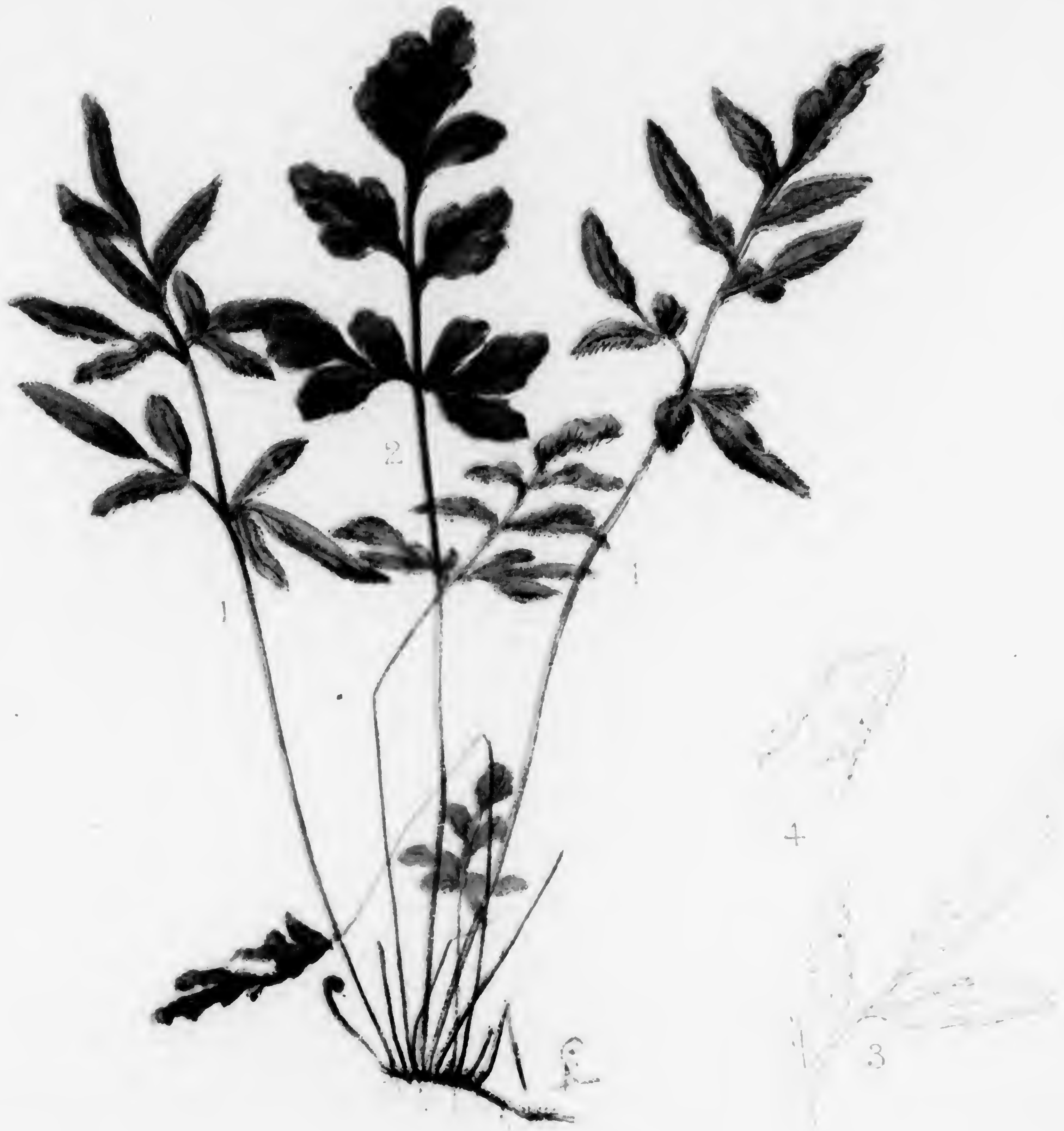
VEGETABLE PHYSIOLOGY IN PRACTICAL GARDENING. — A correspondent from Greenport, N.Y., calls attention to a paragraph in *Garden and Forest*, of January 22nd, 1890, in which a correspondent suggests that vegetable physiology, or any other department of botany, is injurious to one who desires to be a first-class practical gardener. Of course, this is but the opinion of the correspondent, and we are sure would not be endorsed by our eminent contemporary. If a gardener were asked why it is necessary to have a hole in the bottom of a flower pot, he might perhaps answer, "Because it is." "I have found by experience that a plant grows better by having a hole there." But he certainly would not be the worse gardener because he also knew, in addition to this, that the hole was in the bottom of the pot in order that the roots might get fresh supplies of air, which they could not do while wholly under water, as they would be if the hole was not there ; the latter points he could not know, unless from vegetable physiology.

The article seemed to be aimed at "Professors of Horticulture" in American colleges. Certainly some of these know nothing practically of the sciences they teach, and are as bad leaders as the extremes of the other sort. When the writer of this was a student, some fifty years ago, of some two hundred which "came and went" during two years in a certain institution, less than a dozen cared anything for science. The argument of the majority was, "We shall probably be able to raise cabbages and potatoes as well as any of you with all your science." This is about all they ever did raise, while every one of the twelve became "healthy, wealthy, and wise" with all the expression implies. "The proof of the pudding, etc."

SILL'S WINDOW GARDEN SPRAYER.—In last MEEHANS' MONTHLY surprise was expressed that sprinkling plants with a watering pot had not wholly give place to the modern sprayer. These have been wonderfully improved of late. Sill's Sprayer is especially well adapted to house plant work. It is of rubber, the end of the tube being placed in the vessel of water, and the air-bag which pumps the water being in the hand near the plant. The whole plant can thus be reached—the under surface of the leaf as well as the upper. It is just the thing for the amateur gardener.

A WATCH AS A COMPASS.—Hold the watch in such a position that the hour-hand is pointed in the direction of the sun, then the point midway between the position of the hour-hand and XII., will be due-south. If, for instance, the hour-hand point to V., due-south will be between II. and III., or half way between XII. and V.

PELLÆA GRACILIS.—Those readers who have been asking, when shall we have another fern, will be gratified next month, when *Pellæa gracilis* will have the field. The last fern plate—*Asplenium montanam* had many encomiums—possibly its companion in the next issue will merit as much praise.



PELLÆA GRACILIS.

PELLÆA GRACILIS.

SLENDER CLIFF-BRAKE.

NATURAL ORDER, FILICES.

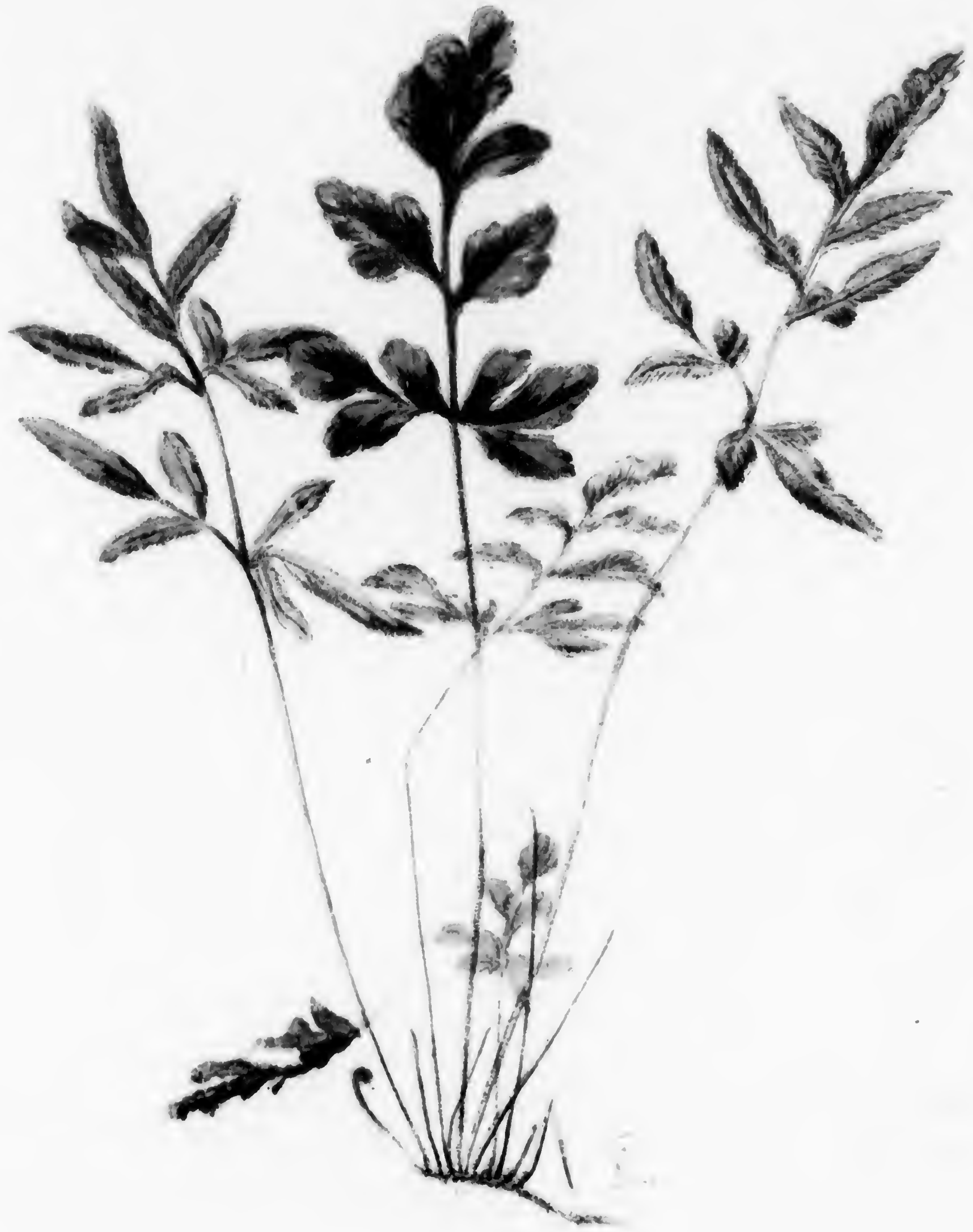
PELLÆA GRACILIS, Hooker.—Fronds smooth, three to six inches high, delicately membraneous and slender, of few pinnæ, the lower ones once or twice pinnately parted into three to five decurrent divisions, those of the fertile frond oblong or linear-oblong, entire or sparingly incised; of the sterile ovate or obovate, crenate or incised; veins of the fertile frond mostly once forked. (Gray's *Manual of the Botany of the Northern United States*. See also Wood's *Class-Book of Botany*, and Eaton's *Ferns of North America*.)

The poets seldom tire of beautiful flowers. Flowers constitute a perpetual burthen of their songs. Most people love flowers; and regard this love as one of the marks whereby man is to be distinguished from the brutes below him. Some, in these days, believe that man was little beyond a brute in his earliest times, and that his present superiority is the result of continuous stages of developmental progress. It is singular to note that our Connecticut poet, Percival, in his "Prometheus," published in 1820, seemed to have had the same idea, for he paints the primeval man as indifferent to flowers:—

"With brute, unconscious gaze, man marks the earth
Take on its livery of early flowers;
He sees no beauty in this annual birth,
No ceaseless working of creative powers;
His soul, lethargic, wakes not in those hours
When air is living, and the waters teem
With new-born being, and the mantling bowers
Are full of love and melody, and seem
The happy Eden of a poet's raptured dream."

It would seem that if an admiration for the gayer flower is a proof of man's advancement, the growing love for ferns which have no pretty blossoms to commend them must be regarded as greater evidence of human progress. Ferns have few outward accessories to recommend them. They take little interest in the livery furnished by the early spring growth of other forms of vegetation, nor are there many expectants eager for their annual birth. Our delicate little species especially is an evergreen, and what it contributes to Nature's charms it gives perpetually. It is about the same to-day as yesterday, and goes on throughout the year. The only change in its garb is in the narrower character of the spring frondlets over those which are produced in the fall. These narrower ones (Fig. 1) produce the sporangia which we see within the rolled edges on the under surface, as shown in Figs. 3, 4. Later in the season the broader ones are produced (Fig. 2). These furnish no reproductive organs, as they are the barren fronds. They are the ones which give the plant its evergreen character, and they remain green until after the fertile fronds have been produced, dying away only as newer ones of the same character appear towards the end of the following summer. Now many ferns add somewhat to the gaiety of nature by producing bright golden or brown sporangia, sometimes in round or at other times in linear masses; but our little species makes little effort to attract the eye. The narrowness of the frondlets alone indicate the fruiting stage—all the rest must be sought for, and best with a pocket lens to aid the search. It is one of those captivating little things which one learns to love for themselves alone.

Nor are we to look where the waters teem with new-born being and the mantling bowers are full of love and melody to find out where it dwells. Its home is in the shady recesses of rugged rocks—not even in flowery climes, but chiefly in those northern regions where flowers are scarce or chiefly come and go with the springtide sun. Our specimens come from the rocky faces of the dells of the Wisconsin, and all who have found it anywhere describe similar locations. It attaches itself to the friendly rock with wonderful tenacity. In the "Entomologist and Botanist" for 1870, Mr. William-



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INTENTIONAL SECOND EXPOSURE

son remarks that on an occasion when he met with it, the roots were so deep in the fissures of the rocks that the rock had to be broken to get the root out. Prof. Eaton confines the species to "calcareous" rocks, but many species once believed to have absolute preferences have occasionally been found feeding at other tables. As already suggested, it is common only in boreal regions. Chapman does not admit it into his Flora of the Southern United States nor does it find a place in Mr. Williamson's Ferns of Kentucky, but it is not at all unlikely that some one will find it some day in some of the southern mountains, as new locations are occasionally being found. At present, it has not been collected south of the Pennsylvania Alleghenies. A few years ago, Mr. T. S. Brandegee discovered it in the mountains of Southern Colorado, leaving an immense gap between that and more northern locations, and which will at no distant day be filled by stations from other collectors. It was long wholly overlooked in our own country. It is first believed to have been found in Siberia by John George Gmelin, whose Flora of that country appeared between 1747 and 1769, and described as *Pteris Stelleri*. At that time the ferns with an indusium bending back over the edge of the frond or frondlet were all known as *Pteris*. All our earlier botanists overlooked it on the American Continent till Michaux found it near Malbaye, in Canada, and he describes it under *Pteris gracilis* in 1803 in his Flora of North America. This is to say, the slender *Pteris* or brake-fern. Botanists are by no means agreed that the *Pteris Stelleri* of Siberia is exactly the same as our species. If it were proved to be, we should have to call our plant under the laws of priority *Pteris Stelleri*, provided the plant should not be regarded as a Pellæa or some of the genera made out of Pteris since Gmelin's time. When a plant is taken from one genus to another, the one who discovers the new relationship is not obliged under the laws to take the specific name from the old to the new genus, though it is regarded best to do so if there do not happen to be a specific name of the same kind already in the genus the old plant is removed to. It remained as *Pteris gracilis* until Sprengel and Kaulfuss' time, when it was taken to the genus Cheilanthes made by Swartz in 1806. Kaulfuss, in 1824, described it as *Cheilanthes gracilis*. It does not appear to have been collected by any one in the United States till Dr. Lewis C. Beck found it in great abundance on the rocks near Whitehall about the year 1830, who still held out against Sprengel's attempt to class it with Cheilanthes. In 1806, Bernhardi, a professor of botany at Erfurt, made another genus out of the old Pteris, called Allosurus. Our little plant was removed to it, as *Allosurus gracilis*, under which name it appears in the earlier editions of Gray's "Manual." Hooker, in "Species Filicum," published at various times between 1844 and 1864, removed it to the Pellæa, a genus founded by Link in 1841, and which is made up of species taken from the old genus Pteris, with some Cheilanthes and Allosurus—and in this genus it seems to remain undisturbed by more modern authors. Since Beck's time it has been found in various places along the line west of New York and Northern Pennsylvania to Nebraska according to Professor Hughes and, as already noted, leaping far below this to Southern Colorado. On the east it is found in Labrador—from whence the writer has beautiful specimens collected by the Rev. Mr. Butler—and from there extends to Siberia, if the form *Stelleri* is the same, till it reaches the Himalaya Mountains, where it ends, so far as now known, its geographical travels. That it will, however, be found in many more northern subalpine regions is probable, as it is a fern very likely to be overlooked, from the obscure locations in which it has hitherto been found.

The pretty figure in Eaton's Ferns of North America illustrates a fern with much more difference between the fertile and barren fronds than our specimen does. Some of his fertile frondlets are an inch in length and not over two lines wide; narrower, indeed, than any found on our plant. The differences between the characters of these two classes of fronds are well worthy of note by the student of ferns. They often afford good specific characters, and come often as aids to generic distinctions. In some cases, as in the common Polypody for instance, there is no difference at all between the barren and fertile fronds.

EXPLANATION OF THE PLATE.—A plant sent by Mr. A. C. Tuttle, from the dells of the Wisconsin. 1. Fertile spring frond. 2. Barren summer one. 3. Under surface slightly enlarged, showing a dotted character of indusium approaching Cheilanthes. 4. Still more enlarged, with indusium thrown back showing the terminal forked vein.

WILD FLOWERS AND NATURE.

THE ADVENT OF SPRING.

"Rich mosses o'er the brown and mouldering bole
Crept many-tinted, with their broidery rare,
And others gemmed the shadowy runnel's side
With clustered stars green as the emerald-stone,
While the arbutus trailing lowly near
Her fragrant and auroral buds and bells
Made pale with greater beauty now once more,
The matchless carpet which they wove anew."

—HOWARD WORCESTER GILBERT.

SEEDS SPROUTING IN FRUIT.—Observers must have occasionally noticed seeds sprouting inside the fruit. In squashes particularly is this phenomenon occasionally seen. On the table is a specimen of *Citrus decumana* (see p. 41) sent by the Rev. Lyman Phelps, of Sanford, Fla., showing a similar occurrence. There is one matter connected with this subject which has not received the attention of scientific men to the extent it deserves—and that is the green coloring of the leaves in what must be the deep shade of the centre of the fruit. It is the general impression that the coloring matter can only be derived through the agency of light. These young orange plants were just as green and fresh as if they had been growing in the full sunlight. Similar facts have been recorded before. Some two years since a paper was read before the American Association for the Advancement of Science, calling attention to the fact that sometimes the cotyledons of *Celastrus scandens* were perfectly green in the seed, but no one ventured any explanation. In addition to these points, there is yet another. As seen in the sketch made, the plant is growing inside the fruit vertically, just as it would do if growing in the ground; the fruit of course is pendant from the branch—the stem end therefore being uppermost. The plant is growing in that direction, and Prof. Phelps says they always grow so. Prof. Hill called attention in "Meehans' Monthly" not long since to the fact that even in the total darkness of a botanical box specimens would curve upwardly, confirming similar points that had already been made in the magazine. It is evident that the law which imposes on plants the necessity of growing erect and also for obtaining green coloring matter, yet needs more elaboration.

NATURAL VARIATION IN FERNS.—Mr. P. H. Oberwetter, Austin, Texas, says:

"In the January number of MEEHANS' MONTHLY there is an inquiry of Mons. H. de Varigny, of Paris, whether there is natural variation of ferns in America. One instance has come under the observation of the writer.

In May, 1886, the writer of this had a chance to botanize in the Granite Mountains of Burnet County, sixty miles above Austin, Texas. In the clefts of the rocks I found what was to me a new fern! It had the pinnæ arranged in whorls around the stipe.

Sending a specimen to Prof. Asa Gray, he said it was only a variety of *Pellæa atropurpurea*, which is simply pinnate, though otherwise the two resembled each other very much.

This is the only instance that came under my observation."

At a recent meeting of the Botanical Section of the Philadelphia Academy of Natural Sciences, Mr. Crawford exhibited a series of forms of *Asplenium montanum*, recently gathered from a newly discovered station—York Furnace, on the Susquehanna in Southern Pennsylvania—varying from very finely dissected fronds to fronds with all the segments very broad, and varying in other respects.

THE GRASSES OF PENNSYLVANIA.—The grasses of Pennsylvania number 150 species and 10 strong varieties. These have been prepared for the World's Fair, under the auspices of the State Board of Managers, by Prof. T. C. Porter. It was hoped long ago that a complete flora of Pennsylvania, by Prof. Porter, would be one of Pennsylvania's great works, but it seems destined not to be.

RHODODENDRON MAXIMUM, L.—Mr. David Day kindly furnishes additional notes on the western range of Rhododendron maximum :—

"As long ago as 1867 or 8, I found Rhododendron maximum, L, growing in considerable abundance at Hamburgh, (then White's Corners), Erie county, at the distance of about ten miles directly south of the city of Buffalo. The fact was reported to Mr. Peck, the botanist of the state, and was by him announced in the 220 Annual Report of the Regents, at page 103, 1869. Subsequently I met the plant at Machias, in Cattaraugus Co., growing at the edge of a sphagnous swamp, near Lime lake. This was at the distance of about 40 miles south-easterly from Buffalo. Later still, I discovered a third station of the plant, at Clear Creek, Chautauqua Co., at the distance of about 38 miles from Buffalo. This locality is the most westerly of the three. All these stations are given in my "Plants of Buffalo and Vicinity," 1883. The plant was also announced by Prof. E. S. Burgess in his "Chautauqua Flora," (1877), as occurring at "Stockton, towards Jamestown," in that county. I have no doubt, however, that still farther west in Chautauqua Co., and in Warren and Crawford Counties, of Pennsylvania, the plant will be found, if searched for in such situations as it affects. I should not expect to meet it in Ohio. But it occurs, according to Gray and Chapman, in the mountains of Georgia, which places it at least 400 miles west of the meridian of Rochester, and makes its appearance likely in eastern Kentucky and Tennessee."

DRESSING FOR LAWNS.—Mr. George Woolson, who has paid special attention to the making of lawns, states that nitrate of soda, at the rate of 200 to 400 pounds to the acre, is one of the best possible fertilizers for lawns. The great advantage of fertilizers of this kind over ordinary manure is that it is entirely free from weeds and gives off no offensive odor. This ought to be a good point with those who have the charge of parks and city gardens. Trees and grass suffer more in these situations from the want of food than city gardeners have the slightest idea of; and the great objection to applying ordinary manure has generally been the offensive odors which make them a nuisance to surrounding property owners and passers by. He also recommends that the grass should not be cut at all the first year. This is all in the line of the teachings of MEEHANS' MONTHLY, that very early pruning tends to weaken plants; and what is true of shrubbery is true of grass also. No plant should be trimmed or pruned the first year.

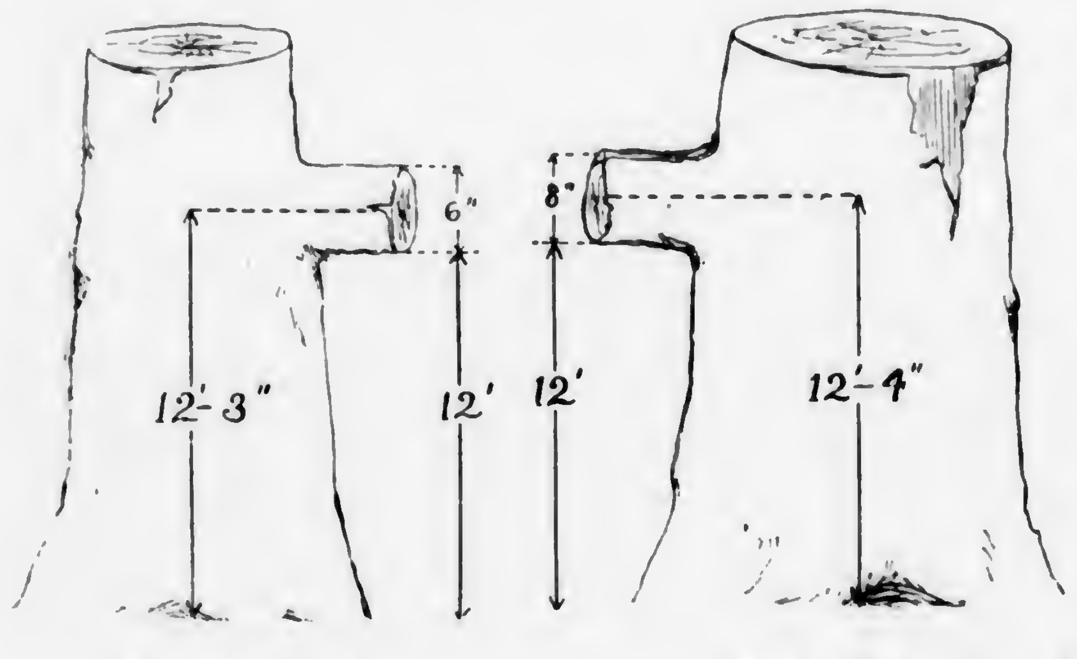
BEAUTIFUL PACIFIC FLOWERS.—Mr. G. W. Hammond, in a recent enumeration of beautiful Oregon flowers gives great praise to the *Cynoglossom grande*. The medium sized flowers are in panicles and of a "Phlox purple," and finally become a *Campanula* blue; both colors are often side by side and produce the effect of watered silks. Others which come in for praise are *Dodecatheon Hendersoni*, *Delphinium Menziesii*, *Aquilegia formosa*—"often called Honeysuckle," and several Valerianellas and Collinsias, *Phlox adsurgens*, "no wild flower more" delightfully pretty, and *Silene Hookeri*, which is of a deeper shade than the Phlox and in this respect more attractive. The "cat's ear"—*Calochortus Tolmei*—gets a share of good praise, and two composites, *Madia elegans*, and *Hemizonia truncata*, are great aids in Oregon wild flower beauty. The native Sweet Pea, *Lathyrus Nevadensis*, "not so conspicuous as the *Gaillardia*," "is not surpassed by many in its delicate shades of purple and blue." Various Irises cut "conspicuous figures," and Dog-tooth Violets in a variety of colors, with the "Chequer lilies" (*Fritillaria*), are large and handsome. The statement is made, of which the writer of this paragraph was before ignorant, that the flowers of *F. pudica* are deliciously fragrant.

ENCOURAGEMENT OF THE LOVE OF FLOWERS.—In a recent paragraph, notice was made of the beautiful exhibition of wild flowers made at the Hartford Co. Horticultural Society by Mrs. Seliger. The note was made up from a report in a Hartford paper, which stated that the lady received a premium therefor; instead of premium it should have been praise, as she exhibited not in competition, but for the encouragement of the children. It appears that premiums are offered for these flowers to children under fifteen years of age; but the lady's beautiful collection, accurately named, was more to aid these children than for any special reward to herself.

PICEA BREWERIANA.—California Weeping Spruce, as it has been named, is a comparatively new species, and represented as being very beautiful; and it is one of the rarest,—possibly in the three localities where it has been found are there not more than a hundred trees all told. Every effort to get seed has hitherto failed, and Messrs. Thorburn & Co., who now offer a small lot, have the honor of being the first to give cultivators the chance to try it.

ELONGATION OF TREE TRUNKS.—Mr. Edwin Jellett, Philadelphia, says:

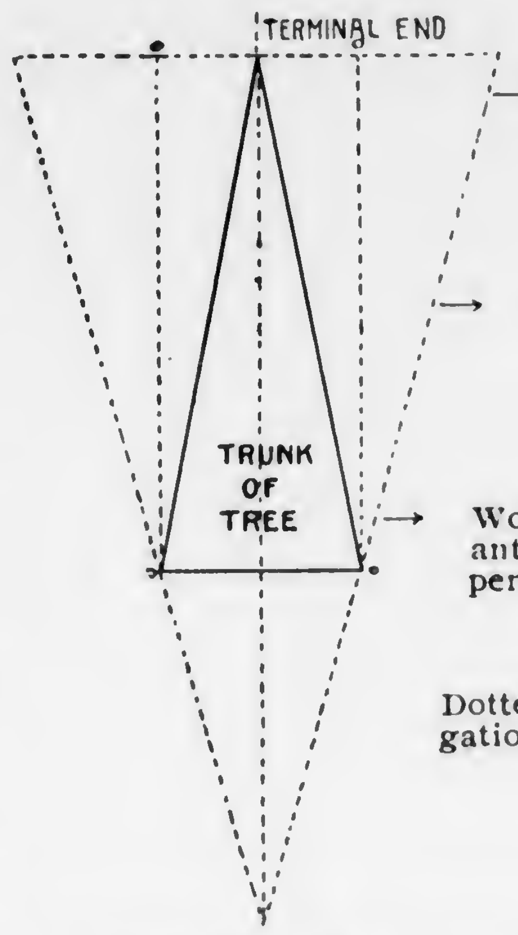
"In reading your editorial upon the "Lengthening of Tree Trunks," in the December number of MEEHANS' MONTHLY, it seemed to me that you had opened, or rather had re-opened, a good subject for discussion and investigation. While I have not the inclination to doubt, nor the ability to question your conclusion, still the decision, as announced, does not satisfy me theoretically. It would seem to me that if there had not been a vertical elongation in the timber, the first branch from the surface would be nearer the earth, or the line of measurement, at the end of a greater number of years, than at the end of a less number of years, by reason of the increase in the diameter of the horizontal growth. If the distance from the first branch to the line of measurement be the same, the line of the horizontal axis must consequently be higher, thus :—



Say at the end of 5 years.

Say at the end of 10 years.

My theory is that there is not an actual growth in mature wood, but that there is an elongation by compression, and that the extent of the compression, and consequent elongation, is in direct ratio inversely, to the square of the diameter of the trunk, which theoretically may be indicated thus :—



Wood spongy and yielding freely; vertical development marked.

Wood harder and less yielding: vertical development less marked.

Wood hard and yielding reluctantly: vertical development imperceptible.

Dotted lines indicate ratio of elongation.

I have not the opportunity for investigation and observation to confirm this theory. I merely offer it with the hope that it may prove of interest."

To which may be added that of course a horizontal branch will have its exterior surface nearer the ground just in proportion to its annual increase in thickness, but the centre of the branch must be understood when taken in reference to the elongation of the main trunk. This centre is always at the same distance from the ground, provided the branch is perfectly horizontal, as in pines and spruces referred to.

EVOLUTION OF THE LEAVES OF THE CINQUEFOIL OR COMMON FIVEFINGER.—The following from the pen and pencil of Mrs. W. A. Kellerman, will have great interest to students of plant life :—

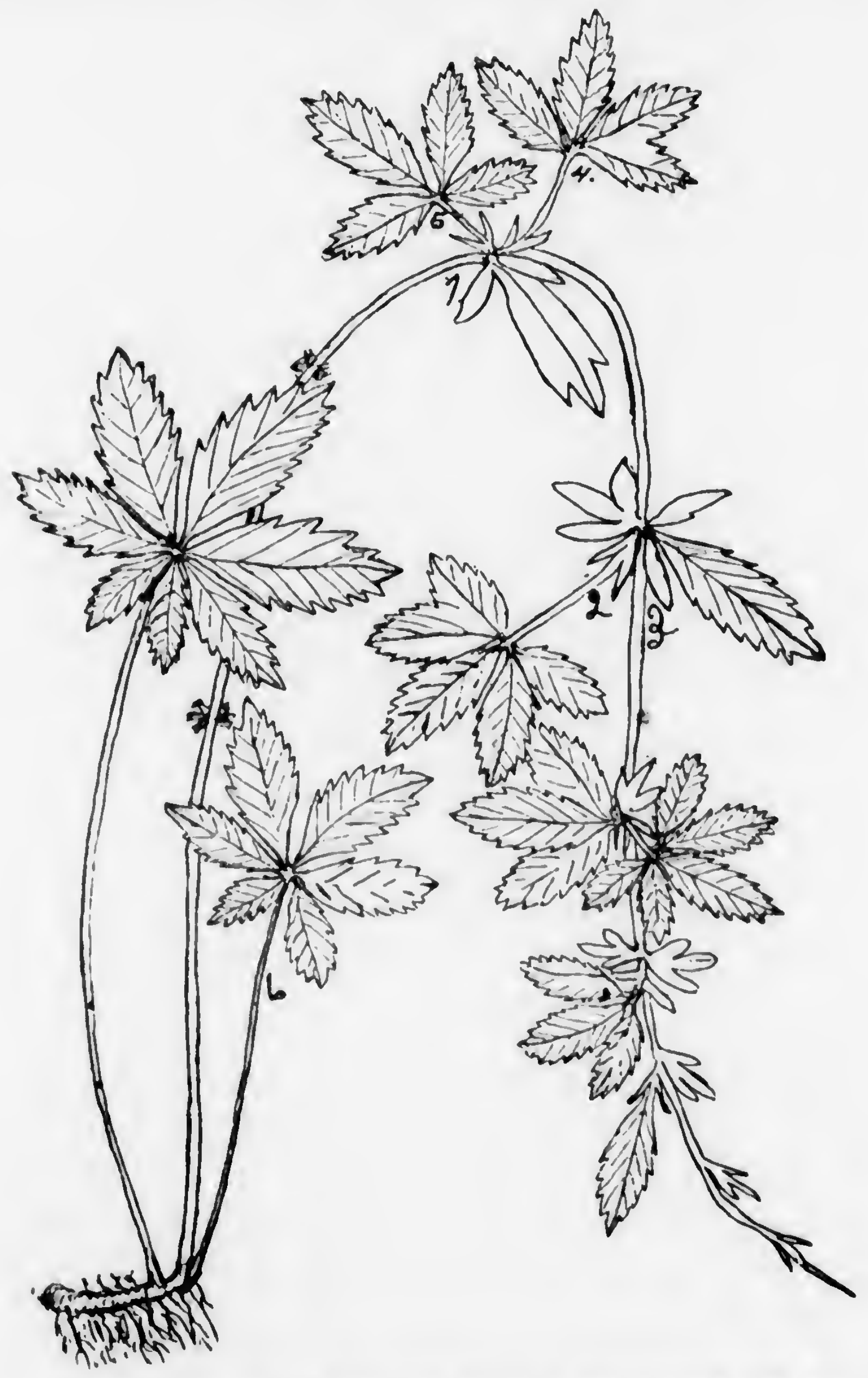
"Almost any plant we take up becomes more and more interesting to us as its life history unfolds in response to our questioning observation and continued study of it. For several years past, I have been very much interested in our common Cinquefoil or Fivefinger (*Potentilla Canadensis*).

This rather dainty, trailing little vine has bright green leaves, resembling those of the strawberry.

Although this species of Potentilla is called "Fivefinger," because of the fancied resemblance of its leaflets to the digits of the hand, there is considerable variation from this five-leaved form, in every vine we may examine.

At the extremity of the vine small, three-lobed, leaf-like appendages are seen, as shown in the accompanying illustration. These occur with little regularity, here and there, along the whole length of the vine. Following back from the extremity we find a single leaf, bearing two small stipules, instead of the five leaflets.

Now, it is right here that the question of evolution, which has been puzzling me, arises. Although according to orthodox botany, the stipules of leaves are considered to be an outgrowth from the base of the leaf or petiole, it seems to me, in this case, that this single leaf, with its stipules is an evolution from the three-lobed appendage or bract. It seems clear that the middle lobe has been pushed forward, and developed into the leaf, while the lateral lobes have become more or less aborted and are the stipules of the present leaves. This lobe or bract occurs just as leaves would occur, and is sometimes developed into what we might term an ancestral form, such a one is figured at 1 in our illustration. At 3 we have a more highly developed leaf, the margin is typical of our normal leaves, but the *lateral lobes* (?) are still larger than the ordinary stipules. Did not this single leaf then, give rise to the trefoliate form, by the process known as leaf branching, so commonly seen in the blackberry (*Rubus villosus*)?



CINQUEFOIL. POTENTILLA CANADENSIS.

The transition stages which occur frequently appear to affirm this interpretation of the evolution of the leaves. At 2, 4 and 5 transition forms are represented illustrating the evolution from three to four, and from four to five leaflets.

In these "ancestral" or single leaves, there is no petiole present, the leaf being sessile; it has not yet outgrown the hereditary influence of the primitive type, viz.: the three-lobed bract, which is still far less developed, having no differentiated petiole, but being attached to the stem by the contracted base of blade.

We sometimes hear people talk of "ancestral forms," and "present types," as if there were but two variations, as if plants (like everything else) were not constantly changing, in harmony with changing conditions. But a form beyond the cinquefoil or fivefinger is represented at 6 and 7, where we have six and seven leaflets. I have thus far never found these "progressive" leaves on the vine, but always as radical leaves. I have found a number of them, and here, too, the transition stages occur. The simple, naturally precedes the complex. Such is recognized as the fundamental law of evolution, and the leaves of the cinquefoil seem but another illustration of this law."

It is but fair to the reader to say that the changes noted in the suggestive remarks of Mrs. Kellerman, can scarcely be due to changing conditions of environment or outward influences. Are they not more likely to flow from varying powers of life energy within the plant itself?

RANGE OF RHODODENDRON MAXIMUM.—Mr. Calvin C. Laney, of the Rochester Park Commission, says:—

"In your issue of January, 1893, you say in regard to Rhododendron maximum, "that Rochester station is possibly the most western one." Mr. Wm. McMillan, superintendent of the Buffalo Parks, has informed me that he has found Rhododendron maximum in a swamp a few miles from Buffalo. It has also been found in Chautauqua County; Taly Hill, Gates County and in Danby, Tompkins County,"

GENERAL GARDENING.

THE ORANGE TREE.

"Just then, beneath some orange trees,
Whose fruit and blossoms in the breeze
Were wantoning together, free,
Like age at play with infancy."

—MOORE.

FROZEN PLANTS.—The exact manner in which frost acts to the injury of vegetation is not yet well understood. It is known that injury is always more pronounced in light than in darkness. Roots of trees exposed to frost in the day time usually rot, while if they are frozen and thawed in the darkness they seldom suffer. Nurserymen understand this better than the amateur. Boxed plants, usually hardy, may have their roots frozen, and yet, if thawed in a dark cellar, or suffered to remain in cases until thawed, are seldom injured. In small conservatories or frames, when by accident the plants in them get frozen, should be darkened and the frozen plants allowed to thaw in that way, and the injury is much less, if any at all, than when thawed by the sunlight. Again, with half-hardy evergreens, which are supposed to be somewhat tender. These suffer little under low temperature in January, when in February they would be utterly killed under the same circumstances, and this is attributed to the much brighter light prevailing in that month than in the former one. The general impression is that evaporation is much greater under bright light than in darkness, and it is rather the heavy loss of liquid under low temperature which destroys, than the expansion and disruption of the tissues by frost. Indeed, there are some who contend that as long as the plant retains a hold on life the sap does not freeze, and if any ice is found in the tissue of plants, that portion of the tissue is practically dead. Ice is sometimes found in the centre of the trunks of trees, and during its formation will expand to such an extent as to split the trunk, but, of course, the interior of such trees is composed practically of dead material.

GARDENS OF NATHANIEL T. KIDDER, Milton, Mass.—According to the proceedings of the Mass. Horticultural Society, one of the best arranged conservatories near Boston is owned by Mr. Nathaniel T. Kidder. It is a lean-to; but is filled with extremely beautiful plants, which are selected chiefly with the view of having interesting blooming flowers in winter time, of a character which could not be obtained at the florists. Among specimens of remarkable beauty, which attracted the attention of the committee of the Mass. Society, were fine Acacias, of which the *Acacia pubescens* is especially mentioned. What is of especial interest is the fact that the beautiful heaths of the Cape of Good Hope, and Australia, which are rarely seen in collections in this country, on account, it is said, of the dryness of our summer climate, are here represented by excellent specimens of several species. Another remarkably pretty plant, *Chorozema cordata*, from New Holland, which has pea-shaped flowers of orange and purple color, and, though seldom seen, is not at all difficult to grow, is represented here by a splendid specimen. Notwithstanding the number of our Australian and Cape plants, of which this beautiful collection is chiefly composed, more popular plants of a temporary character, such as squills, stocks, primroses, cyclamens and daphnes help to give an additional interest to the choice collection. The camellia, which has nearly gone out of cultivation since florists abandoned it for roses and carnations, is still in favor in this beautiful conservatory.

ORANGES AND LEMONS.—Notwithstanding all the active competition of Florida and California, Europe manages to ship profitably, enormous quantities of oranges and lemons to America. Philadelphia is one of the great centres of this trade, and the arrivals are generally distributed by auction. On one day in February 7,796 boxes from Palermo brought about $2.30 per box for best samples, and 4,432 boxes of lemons at $3.70 for the highest price.

THE HISTORY OF THE CANNA.—Our excellent French contemporary, the *Lyon-Horticole*, gives a history of the Canna, from which it appears that the first species known was the one discovered by the famous John Bartram in South Carolina, in 1811, which was named by Philip Miller, *Canna flaccida*. Between 1817 and 1820 a large number of species were introduced, and a still greater number between 1820 and 1830. It was not, however, until 1850, when the dark-leaved canna, *Warszewiczii*, was introduced that hybridization commenced. Since that time every year produces some beautiful forms that have been raised by hybridization, or through cross fertilization by the florists. It is hard now to tell one species from another, as they have been mixed up so considerably. The magazine from which we have condensed these facts gives the credit of the first attempt at hybridization to a diplomatic agent of the French government, named Année. This hybrid was obtained in 1847, and was called *Canna Annei*. It was raised between *Canna indica* and *Canna nepalensis*. After this gentleman came Jean Sisley, recently deceased, and a number of others. In America, however, as recently stated in MEEHANS' MONTHLY, there have been a number of successful improvers. The plants thrive better in our country than in the old world and give quite a tropical appearance to our summer gardening and this of itself gives encouragement to our own improvers.

HOLLYBERRIES.—Does anyone know of a solitary holly tree, a long way from any other holly treee that ever bore a berry? The writer never has seen one. Knowing its proclivity to have purely sterile flowers, he once placed three in a group, but they all proved sterile. Still it is a joy as it is. The group makes a mass about fifteen feet high and twelve feet wide, and early in June, with its young leaves and myriads of greenish white flowers, is far handsomer than many shrubs, though no bright red berries follow. Berry-bearing trees have been selected from the nursery rows for lawn planting, never, however, to bear a berry after. The holly is one of the easiest trees to transplant, if very severely pruned at the time, but they rarely live without this treatment. As a general rule we believe both the American and English holly to be diœcious.

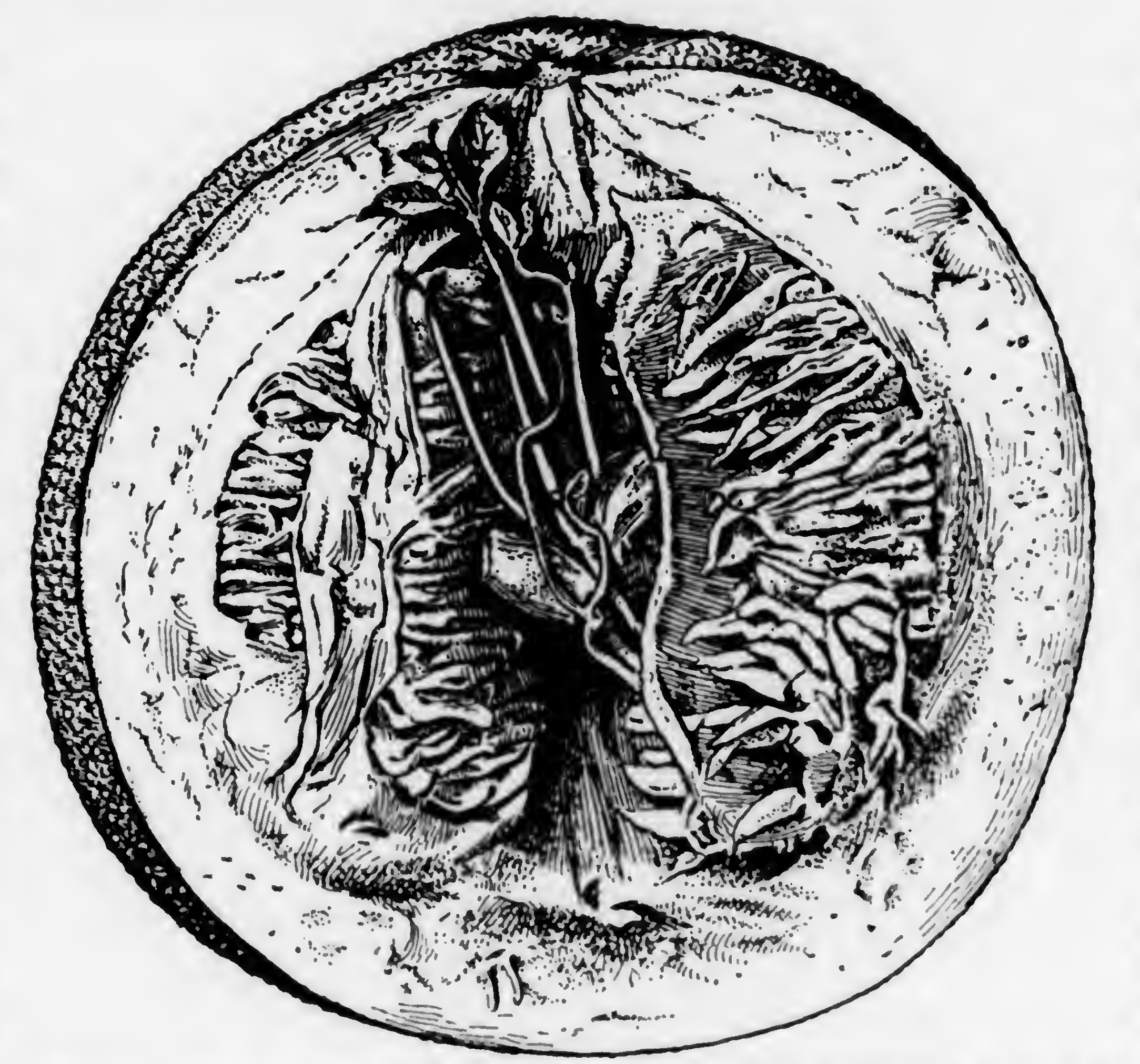
OSAGE ORANGE HEDGES.—Nothing shows more the advantage of scientific knowledge, practically applied, than in the treatment of an Osage Orange hedge. It is particularly desired that the Osage Orange plant should grow very strong for a few years, and then comparatively weak after the hedge is formed—yet Osage Orange hedges, as we see them, grow comparatively slow for several years, and only form a vigorous growth when somewhat neglected. The reason for this is that no plant can grow strong without an abundance of leaves. The first two or three years of the plant's life it should have all the leaves that it can get. By the time the roots get strong the plants will then be able to take care of themselves. For this reason we would not cut an Osage Orange hedge until three years after it was planted. It should be allowed to grow in its own way and vigorously as it had a mind to. Then it should be sawed or cut with an ax close to the ground and suffered to sprout. After such treatment, the sprouts, if untouched, would be 7 or 8 feet in height, more or less, according to the richness of the ground; but the following summer after this cutting down, the pruning should commence. It might be cut at midsummer to the shape we want, and we have, as if by magic, a complete hedge in one season. The continual cutting away of young plants weakens them, and it takes a long time, if ever, for a plant trimmed often in infancy to make a strong protective hedge.

LONGEVITY OF TREES.—In the Eastern States, trees do not live over 300 years at most, even under the most favorable circumstances—the climatic conditions being unfavorable to longevity. In the old world, however, and especially in England, most trees live to a great age. The Yew and the English Oak are familiar examples—a thousand years seem to be nothing to these trees. The "Gardeners' Chronicle" states that the sweet, or as we call it, the Spanish chestnut, also lives long; and it gives a sketch of one, which was quite a large tree, in the reign of King Stephen, that is to say, 1135. We doubt whether any specimen of the Spanish chestnut would remain particularly healthy long over 100 years in our climate.

THE HENNA PLANT.—Under the name of Mignonette tree, *Lawsonia alba*, has long been cultivated and esteemed for its delicious fragrance, in the Southern United States. It is about as hardy as the crape myrtle and will succeed where that will. Mr. H. C. Mitten, of Rija Park, Cassipore, East India, gives the readers of MEEHANS' MONTHLY the following interesting sketch of it as it appears in that far away corner of the Magazine's domain:—

Name, *Lawsonia alba.*, Lat.; *Mendika, Saka. Chara*, Sans.; *Hinna*, Arab.

Habitat.—A small, handsome and sweetly scented bush first grown on the borders of Persia, and then its use and cultivation probably spread from that region west into Africa and eastward to the several provinces of India, such as the Punjab Sind, the Northwestern Provinces, Madras, Bombay and Bengal. Flower small, pale, greenish and fragrant.



GREEN-LEAVED SEEDLINGS INSIDE A CITRUS FRUIT.—SEE P 36

Uses and applications.—The use of the dye prepared from its leaves pounded with catechu or lime, as a cosmetic is evidently of Mahommedan origin, being chiefly used by the women of that race for staining the hands, fingers, nails, and feet. The simple decoction of the leaves also is frequently used in dyeing cloth and handkerchiefs; color produced is a shade of yellowish or redish brown or red. The second use is a paste prepared with water from the powders of *Lawsonia alba* and *Indigofera Anil*, each two parts, and of dried myrtle leaves and emblie myrobolans, each one part, for dyeing the hair.

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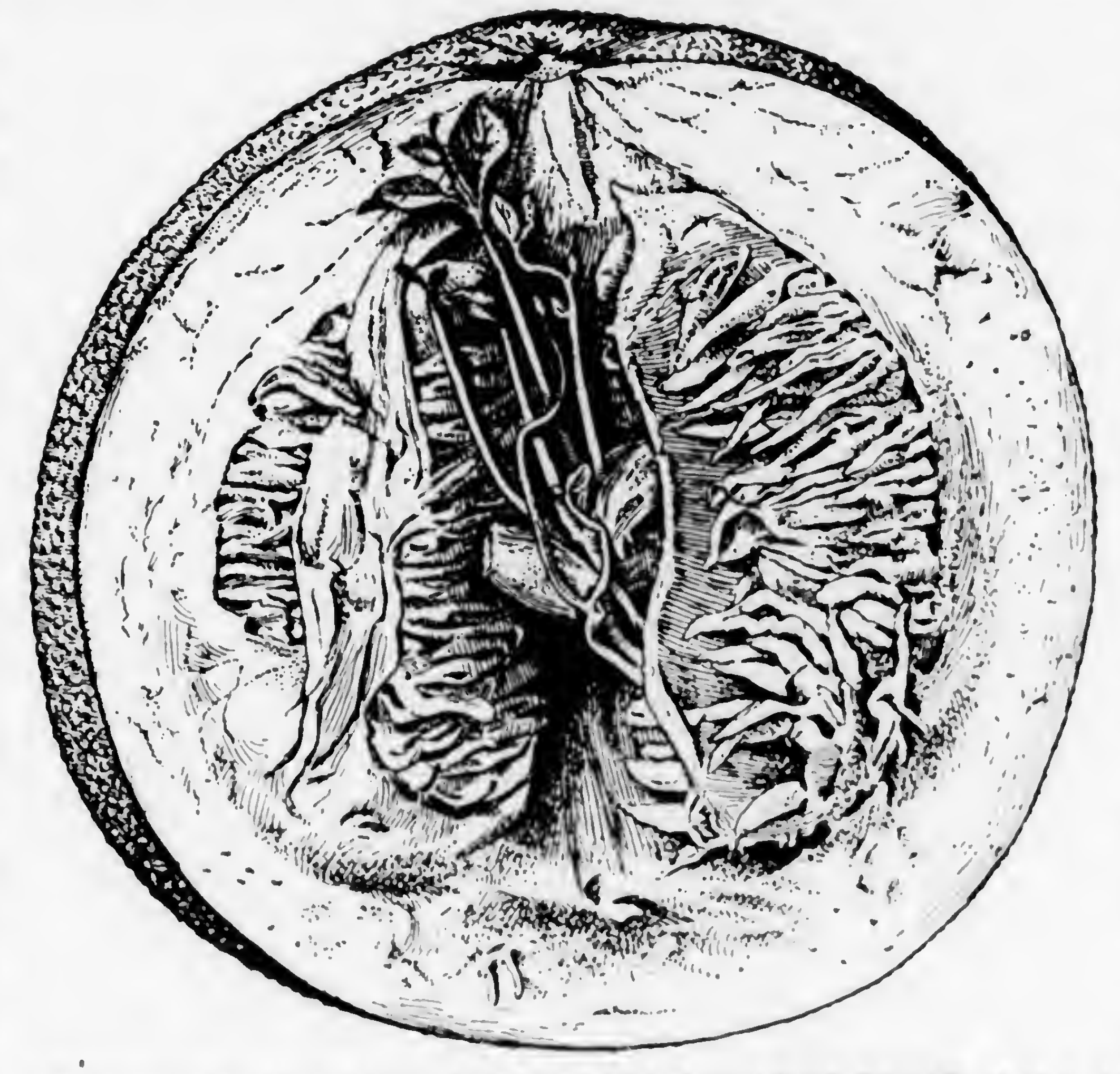

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INTENTIONAL SECOND EXPOSURE

SPIRÆA PRUNIFOLIA.—Among the beautiful flowering shrubs of spring that are now generally appreciated, few sustain popularity better than the *Spiræa prunifolia*, or plum-leaved Spiræa. The flowers are double, and come out in immense profusion at the ends of the branches in early spring. Strange to say, the original single-flowered species, which must be wild somewhere in Japan, has never been introduced into cultivation, and all botanists know of the species is from this double-flowered garden form. There is one attraction to the plant which is not generally observed, and that is the beautiful, rosy red color which the leaves assume in the fall of the year. This makes it as much desirable for ornamental purposes as the profusion of handsome white blossoms in the spring. Possibly this oversight has been due to the fact that so many American trees take on a beautiful tint, and no effort has been made to distinguish one from the other in gardening; but the beauty of the leaves of this plant themselves, in connection with the brilliant fall color, gives an opportunity to place the plant in opposition against evergreens, for instance, or other shrubs or trees which do not change color, and thus bringing out by contrast, the special beauty which the plum-leaved Spiræa in this condition presents.

SPIRÆA PRUNIFOLIA.

HARDY APPLES.—The Vermont *Watchman*, which has an agricultural department of high order, makes the good point that the term "hardiness" in fruit trees may be variously understood. A plant may be hardy in a sense to resist the vicissitudes of climate; on the other hand, a fruit tree, or any other plant may be liable to attacks of parasitic fungi, and in that way easily die in the winter time, when a variety free from these attacks would be hardy. It makes these suggestions in connection with the hardy varieties of apples, and it speaks especially of three kinds, namely: the Alexander, the Astrachan and Oldenburgh, Russian varieties, which have been found not only hardy from the one standpoint, but also from the other, and a new variety, Yellow Transparent, which is so hardy as to adapt itself to a great variety of contingences and thus to be found to do well over the whole continent. These distinctions are well worth noting.

A NEW YUCCA, *Yucca Hanburyi*.—"The Gardeners' Chronicle" gives a description of a new Yucca from Colorado, under this name, which is found growing in company with the common Yucca of that region, *Yucca angustifolia*. The description reads very much like one which has long been known here—having been first collected by Dr. C. C. Parry. Dr. Parry thought it worthy of being regarded as a new species; but Dr. Engelmann contended that those who were familiar with *Yucca angustifolia* with us, were acquainted with its tendency to vary in many directions, and he hesitated to recommend it as a new species. The foliage is precisely the same as the common form of angustifolia—the difference being chiefly confined to the flower. If the same as we suppose it to be, and which is growing in our collection, one great difference is that the blossoms open during the day, while those of the normal forms of angustifolia are nocturnal.

GRAFTING THE PECAN NUT.—It does not seem to be known that all the different species of Hickory, including the pecan, which is one of that family, can be very readily grafted by taking a plant one or two years old and grafting at the collar, just as fruit growers do with their apples and pears in the winter time. Among the hickories, shellbarks and pecans there are often some trees with larger fruit than others, or with thinner shells, qualities very desirable in this class of nuts and desirable to preserve them and increase the number of trees by grafting in the winter. As we have described it is easy to increase them in any quantity.

DIERVILLA —As a general rule, when a plant has been named by a competent botanist and sent out into the horticultural world, where it appears under such a name in hundreds of catalogues, it is almost impossible to change it, although it should be shown that a prior name given by another botanist ought to have been used. Thus *Weigela* is now the name by which a popular shrub is universally known, although it is said that *Diervilla* is its prior and therefore proper name. In England, however, they seem to have succeeded in getting the horticultural world to adopt the change and the plant is now much more frequently called *Diervilla* than *Weigela*.

IMPROVEMENT OF THE CARNATION.—The winter flowering carnation, though vastly improved during recent years, has not reached the size that the old summer flowering kinds produced. An old newspaper, printed in Norwich, England, dated June 29, 1833, records a florist of that city had them blooming four inches across. These were not even those entire edged, broad-petaled ones, which they especially demonstrated carnations, but the fringed-edged dwarf, those cut-edged ones, which they knew as pinks, and between which two classes our winter blooming carnations are intermediate.

YUCCA ALOIFOLIA,—Mrs. T. H. McC., writing from Los Angeles, California, remarks:—

"Noticing your inquiry in your very interesting magazine as to how old a 'Yucca aloifolia' must be before flowering, that one flowered here in 1886, when three years planted and has flowered every year since. It was about one foot high when planted and is about eight feet now."

HEATING SMALL GREENHOUSES AND CONSERVATORIES.—It is easy to heat large greenhouses, but small conservatories attached to dwellings are often troublesome to manage properly in this respect. The ordinary cellar heater gives out too dry a heat and sulphurous vapors get into the heat flues, and which are very injurious to plants. Mr. Ingram of 106 North Third street, Philadelphia, claims to have combined hot water with an ordinary stove, to be placed in each greenhouse, which is entirely satisfactory.

FRUITS AND VEGETABLES.

FERTILIZATION OF THE FIG.—As recently noticed, Californians have been to a great deal of trouble to introduce an insect from the old world, which is supposed to be an agent in the fertilization of the fig. The fig itself will come to considerable perfection without any fertilization, as is well known. The seeds, however, being without any germ are of course imperfect. As the result of an examination by the editor of this magazine years ago, he was satisfied that the fig is not by any means unisexual, but, in a large number of cases, has both forms of flowers inside one fig. In such cases there is no reason why one individual fig tree might not produce figs with perfect seeds. It is now stated in the *California Fruit Grower*, that a committee recently examined some fruit of the Smyrna, at Los Gatos, in Santa Clara County, and found them full of perfect seeds, without the intervention of the supposed fig insect. It so happened that the last letter of the eminent botanist, Dr. Ravenel, of Aiken, S. C., to the writer of this paragraph, sent just before his death, so strongly combated the possibility of a fig coming thus to perfection, that the editor has never strongly expressed his own views,—Dr. Ravenel having been so very acute an observer in these matters; still the facts now related certainly tend to show that the fig is by no means the unisexual fruit it has generally been supposed to be. On the other hand attempts have been made on trees belonging to Mr. Shinn, at Niles, to effectually fertilize by the use of the staminate figs, with no better results than on trees where no pollen was employed.

PARSLEY.—It is common to sow parsley in spring in the open ground; but some amateurs state that they get better success by sowing in boxes in February, and then setting the plants out in good rich earth when the spring time comes. Of course the plants have to be well watered at the time of transplanting. If not sown until the proper time for open air work commences, the plants do not get large enough to be of any service until late in the season. The general impression is that parsley does not transplant well; but this is said not to be the case by those who have given it careful treatment, as above noted.

Tender Asparagus.—The annoying feature of some asparagus, in many cases, is the stringiness of the lower portion. It is very aggravating, as to many people the lower or white portion is the most toothsome of the whole. But there is sometimes asparagus which, from tip to toe, throughout its whole length, from the thick base to the green or purple top, is as tender as a sprig of cauliflower, so tender that it will almost melt in one's mouth. Few know how this is done, and if the readers of Meehans' Monthly will keep the secret to themselves, it shall now be told to them. This tender, luscious character is imparted to the thick ends by bleaching, just as celery is bleached, only in those countries where special attention is given to the production of good asparagus, it is done in a different way. The plants are set out in beds about four feet wide and when the spring comes, very light rich earth is placed some six inches deep over the plants, to be raked off into the alleyways, and again thrown over the plants in spring. Much the same results can be obtained by deep planting, provided the soil be very light, and this saves the labor and trouble of the annual labor which the specialist in asparagus culture gives to the culture of the plant. In our country where good labor is hard to get, and costs much when found, the deep planting will be best for obtaining nice, tender asparagus.

The Cos Lettuce.—A Florida paper notes that the Cos lettuce is the only class that can be grown to any satisfaction in Florida—the round-headed kinds get much sand in them and it is impossible to get this sand out with any amount of washing; but the Cos lettuce, which has to be tied up in order to blanch properly, is free from sand. This is an advantage that we have never heard of before, in connection with this class of lettuce.

Cauliflower.—It is remarkable how slowly the cauliflower has become a staple American vegetable, probably because it is not quite as hardy as the rest of the cabbage tribe. If the plants can be protected somewhat in the fall they do remarkably well. Dr. Crozier, who has been a successful market grower for seven years, has recently published a complete work on the subject.

Names of Fruits.—*The Gazette*, of Allegan, Mich., has an excellent horticultural column, in which appears a paper by Mr. T. T. Lyon, on the necessity of having some authority decide the proper names which fruits shall bear. He thinks that the best way to settle this question would be for the horticultural division of the Department of Agriculture at Washington to be that authority, and whatever nomenclature is decided on by that department should be the one adopted by fruit growers. This body is to be also the arbiter upon all questions pertaining to the identification of varieties and the determination of their comparative values. It is not clear that this tribunal will be any greater than the authority of the American Pomological Society, which was established expressly to decide these questions; still it is pleasant to find that the best pomologists are awake to the necessity of in some way or another crowding out the enormous amount of trash which is continually being thrust on the American fruit grower.

Persimmons—A correspondent of *The Florida Farmer*, writing from Japan, has some merriment over the fact that Americans wait to eat persimmons until they have been partially decayed, in order to get rid of their bitterness. He states that in regard to the persimmons in Japan it has been found that their bitterness resides only in the skin, and they peel their persimmons, therefore, and these fruits are as good after that, when just taken from the tree, as if they were to wait, as in America, for the fruit to blette.

Peach Growing in Kentucky.—Professor Cross, of Louisville, Kentucky, writes encouragingly to Meehans' Monthly, of peach culture near that city. There have been five full crops in six years, and the prospect for the coming year was at that date, January 10th, excellent for the coming season.

Pepino.—*Garden and Forest* identifies the *Solanum* which has attracted considerable attention as tree tomato, pepino, and has even been named *Solanum Guatemalense*, as a species long since named by Aiton, *S. muricatum*. Its native place is credited by Aiton, to Chili and Peru.

A Large Pear Tree in Louisiana.—Col. M. B. Hillyard, of New Orleans, writes in reference to a pear tree in the northern part of Louisiana, which was a very large tree, and growing where it now stands as early as 1845, and is now six feet in circumference a foot above the ground. It is low and wide spreading; the head having a diameter of limbs estimated at 32 feet. It seems to be about 20 feet high. It is the picture of health, though it has never had any artificial fertilization and the ground has not been stirred around it for probably 30 years. From the description given it seems closely related, although not quite the same apparently, to the old French Pear, Brown Buerre. It is probably some other French variety brought by the early French settlers of Louisiana. It ripens about November. The facts indicate that Alabama and northern Louisiana are admirably adapted to pear culture, although it is supposed that neither the pear nor the apple are well adapted to Southern fruit growing. More information in regard to the possibilities of these localities would be very desirable.

Japan Plum.—A plum has been introduced into our fruit culture that is really a desirable addition to our list of fruits. But it is liable to be confused with another fruit grown in New Orleans and the South, which is known as Japan plum, though really of the medlar tribe. This has been known as *Mespilus Japonica*, though other botanists call it *Eriobotrya Japonica*. This last flowers in fall and ripens towards January, so cannot be grown where the frost descends below the freezing point. The fruit is golden, more like an apricot than a plum.

Early Radishes and Lettuce.—Considering how easy it is to get these favorite spring vegetables early by the use of glass frames, it is rather surprising that amateur gardeners do not more often take pains to have these luxuries. Frost does not hurt them and they grow on with every few warm days, resting only when the ground is frozen. If the seeds are sown thinly under a common hot-bed sash, they may be had for several weeks in use before they could be obtained from the open air.

Indian Fruit Orchard Near Geneva.—Mr. Geo. S. Conover contributes the following especially interesting note, regarding the Indian fruit orchard before referred to:—

"In connection with the paragraph 'Indians as Fruit Growers' in the January number of the Monthly, the following may be of interest. The site of the capital village of the Senecas, near Geneva, is now occupied in part by the New York State Agricultural Experiment Station. This place was completely destroyed by the army of General Sullivan in September 1779, the palisade fortification which had been built by Sir Wm. Johnson to protect the Senecas during the French war was burned and the large Apple and Peach orchards girdled. Sprouts from the roots however soon sprang up and in 1797, only 18 years later, 100 bushels of peaches were sold to a distillery, and cider to the amount of $1200 was sold, the product of these orchards. Sergeant Moses Fellows, of Sullivan's army, records in his journal under the date of Sept. 9, 1797, as follows:

'By Reason of the Heavy Rain last night we were Not able to move this Morning till 12 o'clock for Geneses; what Corn, Beans, peas, Squashes, Potatoes, Inions, turnips, Cabage, Cowcumbers, watermillions, Carrots, pasnips &c our men and horses Cattle &c could not Eat was Distroyed this Morning Before we march;'—A pretty good assortment I think for that place in those days."

Enemies to Fig Culture.—In all our horticultural works great merit has been claimed for the fig, that neither fungus disease, nor any insect's ravages seemed to distress it. It is now stated, however, that a small beetle is playing great havoc with the fig trees about New Orleans. Its method of procedure is to girdle the branches.

Plum Prince of Wales.—The *Canadian Horticulturist* for November, 1892, gives a beautiful colored plate of the Prince of Wales Plum, introduced from the old world by Mr. S. D. Willard, of Geneva, who gives it much praise as doing well in that portion of New York. It is a round plum, reddish-purple, medium in size, and so abundant a bearer, that thirteen plums are on a branch less than twelve inches long.

BIOGRAPHY AND LITERATURE.

ROTHA.

While I sit and muse as the shadows deepen,
Scenes of youth's bright morn reappear before me,
And the days long past, in their dewy freshness;
Sweet resurrection!

Thro' the wide-spread boughs of a lofty elm-tree,
Where their pendent nest orioles are weaving,
Sunbeams glide and dance on the running brooklet,
Spotted with foam-flakes.

Silvery minnows sport in the crystal waters;
Round the hawthorn-blooms butterflies are flitting;
Humming sounds are heard, and the air is balmy,
Laden with odors.

Fairer far than these, in her virgin-beauty,
Full of grace, she comes, like a fawn advancing,
Light of footstep, where violets and bluets
Broider the green bank.

Loose her tresses fall underneath a garland;
Every feature tells how the joyous springtide
All her soul hath filled with its life and splendor;
Darling of Nature!

Brief her sojourn here as the vernal flowers'!—
Angel-pinions gleam in the gate of Heaven,
And immortal Love to her bosom gathers
Rotha, the blue-eyed.

—*Professor Thos. C. Porter.*

THE NAME TABERNÆMONTANA.—Regarding a recent inquiry by Mr. Saunders, Prof. G. J. Hill says:—

"The specific name of *Amsonia Tabernæmontana* comes from the employment of a generic name for a trivial one. It is derived from Tabernæmontanus, a botanist of the sixteenth century, who died in 1590. In 1703 Plumier published at Paris a work on American plants, and dedicated a group of apocynaceous plants to the botanist who had lived more than two hundred years before, Jacobus Theodorus Tabernæmontanus, stating that he received the last name from the place of his birth, Berg Zabern, for which Tabernæ Montanæ is given as the Latin equivalent. Linnæus adopted this generic name when he published "his Genera Plantarum." The plant was called by him *Tabernæmontana Amsonia*. In 1788, Walter, in the *Flora Caroliniana*, reversed the order of the two words, and we have the name as it now stands. *Amsonia* is at present limited to a small genus of herbaceous plants of North America and Eastern Asia, while *Tabernæmontana* comprises a much larger number of woody plants of the tropical parts of the globe. Plumier says Tabernæmontanus was an industrious man, especially devoted to the study of botany. He published two works on botany, one in Latin, the other in German, a "New Book of Blants," on useful plants. To write in the vernacular on scientific subjects was very unusual for the time, and the author deserves remembrance for it. The translation of the name, *Mountain of the Tavern*, may be the correct one, though Plumier gives it in the plural, which would be *Mountain Taverns*. It was evidently in some such sense that Plumier took it, for Bergzabern is a town of the Palatinate, at the eastern foot of the Vosges Mountains. The specific name of the plant has, as in many other cases, no descriptive value, only historical or philological. The desire of Mr. Saunders to know the meanings of plant names is a very commendable one, and adds much to one's knowledge of botany, and to the pleasure derived from the study of its nomenclature. The vicissitudes of names in natural history is very great, owing to the numerous changes, legitimate or whimsical, to which they are subject, but those who take delight in a name as something more than a definite arrangement of letters to designate an object, will always be rewarded for their efforts."

It may be added that the conductors had it in mind to explain the substantive character of the adjective in this instance, but the paragraph passed before it was done, a lapse not regretted now, since the result has been Mr. Hill's instructive paragraph. It may be further noted that it is customary when these proper or generic names are employed as adjectives or "specific" terms, to continue the capital initial, and hence we have *Amsonia Tabernæmontana* and not *A. tabernæmontana*.

Mr. Michael Barker kindly sends a similar note to that supplied by Mr. Hill.

DR. ELLIOT COUES.—Few scientific men are better known by reputation than the subject of this sketch; and in those lines of natural history relating to rural affairs, which it is the province of MEEHANS' MONTHLY to cultivate, his reputation is especially wide. In the department of ornithology particularly, he stands pre-eminent. Aside from his devotion to natural history, properly so-called, he has paid very successful attention to physical science. He was born at Portsmouth, N. H., September the 9, 1842. His father was a business man; but who possessed many of those scientific attributes for which his son has since become so famous. The family moved to Washington in 1853, where Dr. Coues has always resided, except when serving in the army, or in scientific explorations. He graduated from what is now the Columbian University, in 1863. Among his earliest labors was a collection of the birds of Labrador for the Smithsonian Institution; but his scientific love has drawn him from the extensive practice of medicine and surgery. He was Secretary and Naturalist of the United States Geographical Survey of the Territories, under Dr. Hayden. He was elected in 1877 a member of the Academy of Natural Sciences, of Philadelphia, being probably the youngest man who ever received that honor. He resigned finally his position in the army, and has been connected more or less ever since closely with the Smithsonian Institution, at Washington. The number of scientific institutions which have honored Prof. Coues with membership is phenomenal. One might say, in a general way, that there is scarcely an institution of distinction over the whole world that has not Dr. Coues' name on its membership roll.

DR. ELLIOT COUES.

W. D. BRACKENRIDGE.—Intelligent horticulture suffers a severe loss in the death of Mr. W. D. Brackenridge, which occurred near Baltimore on February 3rd. He was in his eighty-third year. He was born at Ayr, Scotland, on June 10, 1810, and early in life became eminent as a landscape gardener. He engaged with the famous nurseryman Robert Buist of Philadelphia in 1837, and in 1838 sailed as naturalist on the celebrated four years cruise of the Wilkes' exploring expedition. To him was committed the preparation of the work on the Ferns of the expedition, for which he was eminently fitted by a three years course under Prof. Otto of the Berlin Botanical Garden. The result was a noble work. After a few sample copies had been distributed, the whole was lost by fire. Mr. Brackenridge's copy is one of the treasures of the library of the Academy of Natural Sciences of Philadelphia.

ROBERT DOUGLAS.—Robert Douglas was the first American (though he was not born in America) to show that evergreens could be raised in America as cheaply and as easily as in Europe, and who gave the first great impetus to practical forest planting. He not only prepared the seedlings—but undertook the work of planting the forests—and what he did in this line, has been the great American exemplar of good forest culture. It will gratify his many friends to know that though in his 80th year, he is still ready on any occasion to climb a mountain and enjoy a genuine forest outing, with any one above 60—or even very much younger if they do not dare him too much.

FRANCIS DARWIN.—Mr. Francis Darwin, who makes a fourth in the direct line of descent from the original Darwin, has been appointed deputy professor of botany in the England Cambridge University, as an aid to the aged Prof. Babington, of whom we have made a note recently.

PROF. EMORY E. SMITH.—Emory E. Smith, Professor of Horticulture in the Leland Stanford, Jr., University of California, has returned from the long European journey undertaken with the view of studying the best methods of teaching horticulture as practiced in the old world.

GENERAL NOTES.

THE FLOWERS AND FERNS OF THE UNITED STATES.—Mr. C. F. Saunders, of Philadelphia, after purchasing a copy of "Flowers and Ferns" as offered in our advertising pages, was kind enough to send the following letter to the author:—

"I received from your firm on Saturday the volume of "Native Flowers and Ferns of the United States," and cannot forbear sending you a line of acknowledgment, as the money which I sent you does not begin to be an equivalent for the pleasure which I have already derived from only a superficial examination of the book. As I sat by the fire Saturday evening turning over the pages, with my little niece, who has been an enthusiastic companion in many a botanical ramble, it seemed like going "a-Maying" again. We lost sight, for the nonce, of our wintry environment—the shrill whistle of the wind died away into the drowsy hum of bees and we were off "down Jersey," despite the frozen Delaware and the snow drifts. So please accept our thanks for the book which I find to be the key that unlocks a hundred delightful memories."

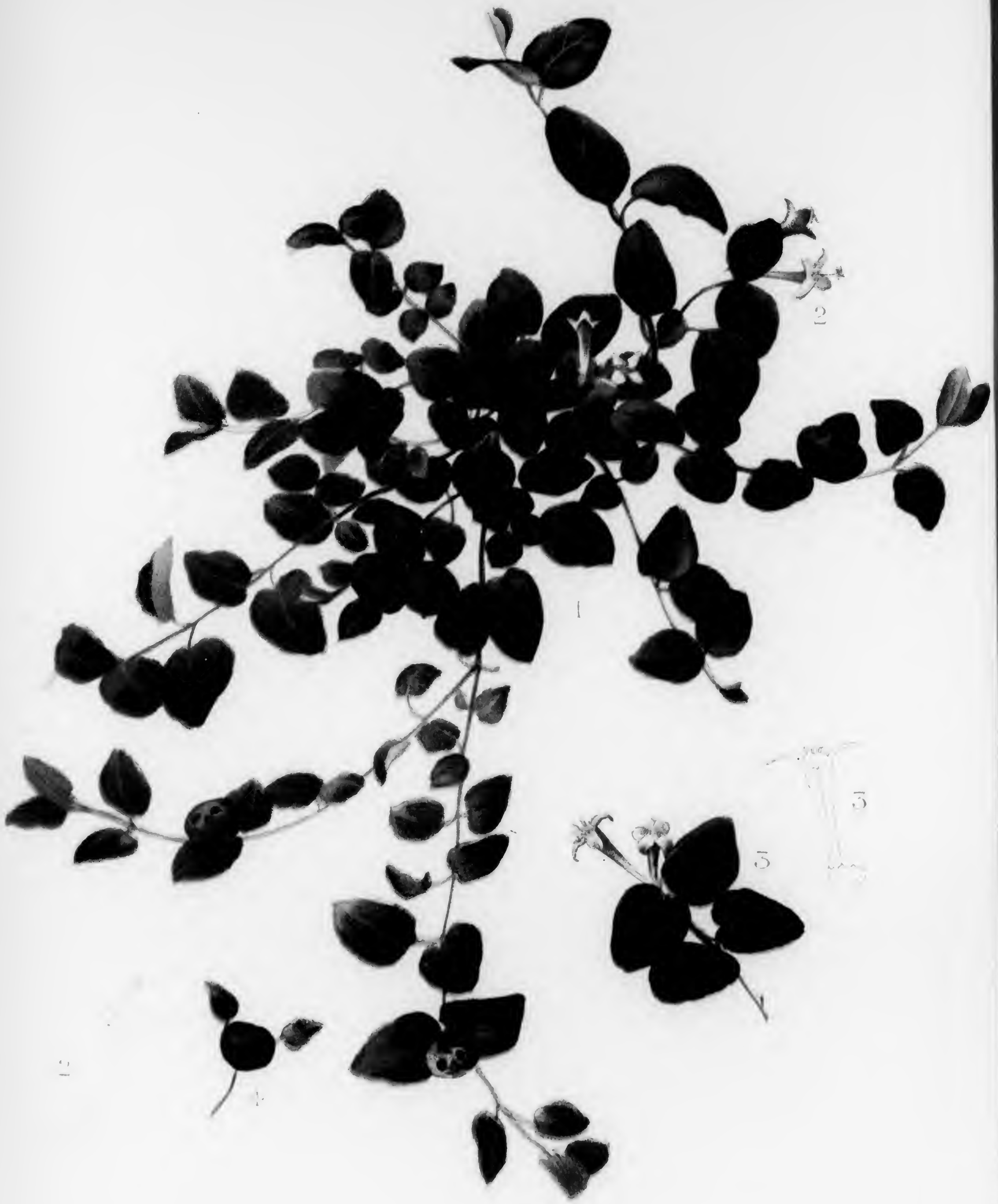
So much interest was felt and is continued in that work, that though the author lost three thousand dollars by the sudden death and the subsequent insolvency of the estate of the publisher, Mr. Charles Robson, the consciousness of the pleasure his labors gave thousands, has always kept him from seriously regretting the loss. He seldom uses the titles and honorable appellations bestowed on him by scientific institutions and associations of learning, much as they are prized, and he may therefore be more readily pardoned, perhaps, for being touched by unsought testimonials of this kind.

ENGLISH AND LATIN NAMES OF PLANTS.—Botanists complain of English names sometimes, and now it is Prof. Lemmon who complains of botanists that they will lazily coin an English name sometimes, when there are already good ones in circulation. The English botanists, for instance, speak of the "Douglas Fir," when the regularly accepted name is Douglas Spruce. As to whether the plant is a Fir or a Spruce, is no more a question when it comes to an English name, than whether the "Tulip Poplar" of the people is a Poplar in botany.

PROF. PORTER'S POEM.—The beautiful poem by our great botanist, Dr. Porter, will have a special interest to the readers of the present issue of MEEHANS' MONTHLY. Many of us have had our "Rotha's"—the early loved and the long since lost. Amidst sorrow that can hardly be suppressed, it is still a pleasure to see the picture of their young and happy lives, under leafing trees, and garlanded with spring flowers, and to feel that though their lives might have been prolonged, their short careers were supremely happy.

MITCHELLA REPENS.—For the April leading illustration a famous popular Eastern plant has been prepared — the Partridge Berry, *Mitchella repens*, selected for April because of its early flowering, though for its beautiful red berries, of interest all year round. To the student of plant life it commends itself as well as to the mere lover of wild flowers, by much the same opportunity for peering into the secrets of nature which the trailing arbutus afforded us.

FLORICULTURE IN THE UNITED STATES.—At the annual meeting in Washington last August there were 2,000 members in attendance. $40,000,000 is invested in the business in the Union—and the sales last year are estimated at over $26,000,000. When it is remembered that the florist's business is chiefly confined to cut flowers and plants for decorative purposes, the immensity of the business is astounding. In many cases the demand is from mere fashion, and does not represent real floral love, but much of it is from real love.



Mitchella repens

MITCHELLA REPENS.

PARTRIDGE BERRY.

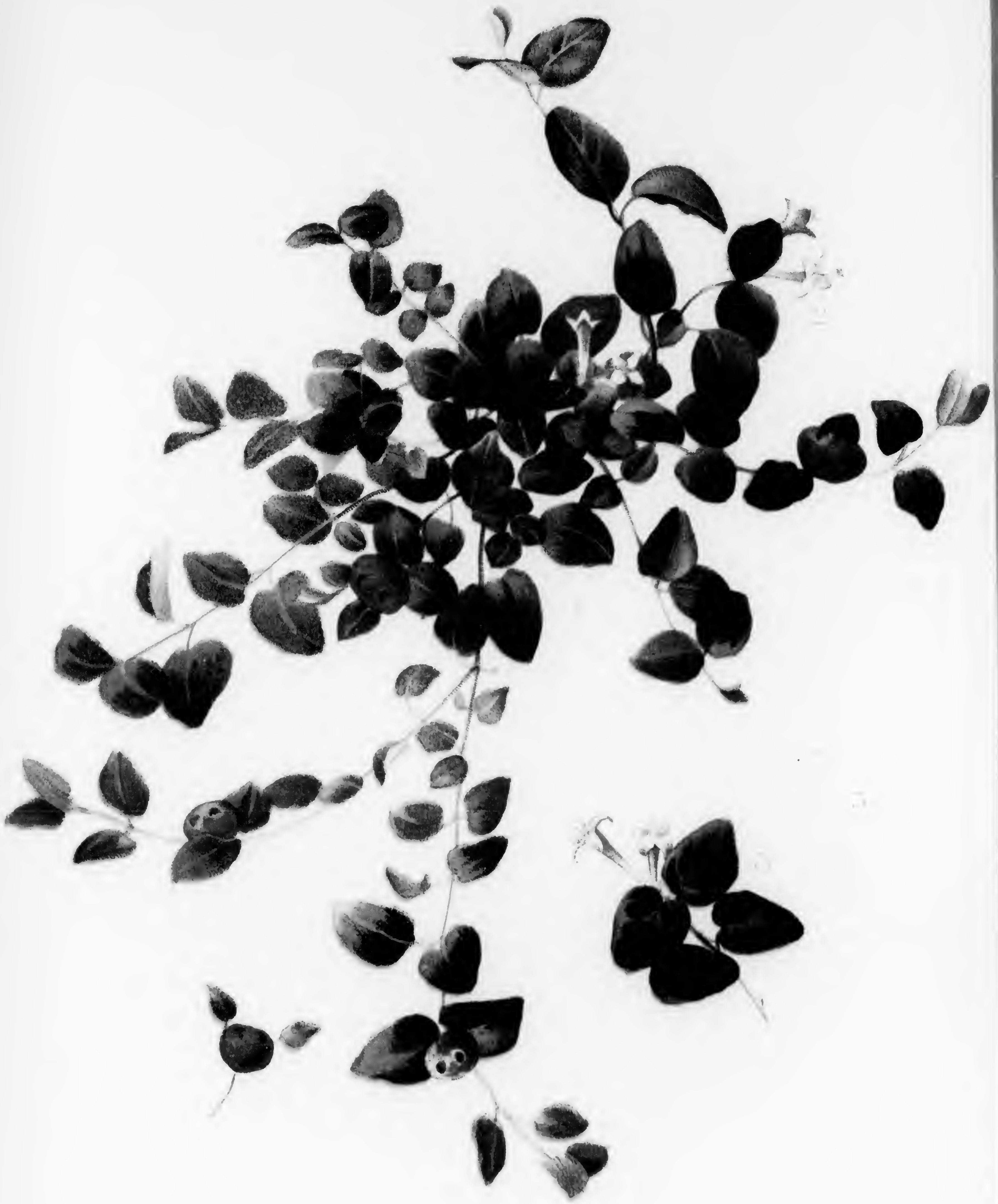
NATURAL ORDER, RUBIACEÆ.

MITCHELLA REPENS, Linnæus.—Stem prostrate, six to twelve inches long, branching from the root, and spreading in all directions; leaves roundish ovate, sub-cordate, dark green, with a whitish central line, half an inch to three-quarters in length; petioles one-quarter to half an inch long, connected by small acuminate stipules: flowers white; peduncles two—flowered, axillary and terminal; berries twin, sub-globose, red when mature, insipid, persistent until flowers come again. (Darlington's *Flora Cestrica*. See also (Gray's *Manual of the Botany of the Northern, United States*. Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.)

The Partridge berry is a distinctively American plant, and is an important element in American forest scenery. It is an inhabitant of almost every portion of the United States east of the Mississippi river, extending from its extreme northern to its southern limit, and it is rare that any intelligent writer gives details of the attractive vegetation of any part which interests him, without including the *Mitchella repens* in the list of species found there.

For instance, William Bartram in his "Travels through the Carolinas and Georgia to Florida," published in 1791, is describing the spot in the Cherokee country where he first discovered the *Magnolia auriculata*. All alone he "entered upon the verge of the dark forest, charming solitude!" He found "rushing from rocky precipices under the shade of the pensile hills, the unparalleled cascade of Falling Creek." Further on he says, "I have seated myself on the moss clad rocks, under the shade of spreading trees and floriferous fragrant shrubs in full view of the cascades," and then noted "in this rural retirement the assemblage of the charming circle of mountain vegetable beauties." In this circle with *Anemone thalictroides*, *Anemone Hepatica*, various Trilliums, *Cypripedium*, *Sanguinaria*, and *Epigæa*, *Mitchella* finds a place. It may be noted here that this plant is not only a native of the United States,—it extends into Mexico. But even in these southern locations it shows its northern proclivities by always choosing the coolest places. Generally it is along partially shaded river banks, or under the shade of lofty trees. In the warmer latitudes, however, it is chiefly at home in the higher altitudes. Its love for coolness is well shown by an incident recorded by Mr. J. R. Lowrie in the first volume of the *Botanical Gazette*. It appears that in the Alleghanies of Central Pennsylvania, on Tussey and Bald Mountains, at an altitude of 1400 feet, there is a tract of land which exhibits the curious phenomenon of perpetual frost. Even in August it seldom thaws to a greater depth than three feet from the surface. The list of plants growing here as given by Mr. Lowrie is very meagre, chiefly a few *Rosaceæ*, but the *Mitchella repens* is recorded as one. When, however, it finds itself in a warmer climate, which from its wide distribution it is very likely to do, a very little warmth brings the flowers forward so as to show a wonderful difference between the time of flowering in such a spot, and localities not so very far away. For instance, Dr. Baldwin, who was appointed Naturalist to the Long Exploring Expedition, but died at Franklin, Missouri, before the expedition had well started on its way, found it on Cumberland Island, in the extreme southeast corner of Georgia, in bloom on the 22d of December, 1813. Here, near Philadelphia, on this 4th day of June, 1881, the first flowers are just open, or nearly six months of difference, in only about six hundred miles as the crow flies.

It has been long known to botanists, as Ray mentions it in 1704 as having been communicated to him by Dr. Sloane, who "received it from Dr. Vernon, who collected it in Maryland." Plukenet, who wrote in 1769, gives a figure of the plant, and ascribes its place of growth to "the Province of Florida." The living plants, Aiton says, were introduced to



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INTENTIONAL SECOND EXPOSURE

England in 1761, by Mr. John Bartram. Gronovius notices it in *Flora Virginica*; but by all these early botanists it was regarded as a sort of Honeysuckle or Lonicera, to which it was referred even by Linnæus in his earlier works. In our description from Dr. Darlington, the student will note it said that the berries are "twin." This is the same with some of the Honeysuckle family, and on this account chiefly, it was probably classed with them. Dr. Mitchell, after whom the genus was subsequently named was the first to note its distinction, and in a small work describing many new American genera, gave this the name of "Chamædaphne." Of this work Dr. Gray thus writes in "Silliman's Journal" for 1840. "Dr. Mitchell had sent to Collinson, perhaps as early as in the year 1740, a paper in which thirty new genera of Virginian plants were proposed. This Collinson sent to Trew at Nuremberg, who published it in the *Ephemerides* and *Natural Curiosorum* for 1748, but in the meantime most of the genera had been published, with other names, by Linnæus or Gronovius. Among Mitchell's new genera was one which he called *Chamædaphne*; this Linnæus referred to Lonicera, but the elder (Bernard) Jussieu, in a letter dated February 19, 1751, having shown him that it was very distinct both from Lonicera and Linnæa, and in fact belonged to a different natural order, he afterwards named it *Mitchella*. If Mitchell's name was published in 1748, and Linnæus did not name it till "after" Jussieu's letter in 1751, under the law of priority which prevails among botanists, Mitchell's name should be the recognized one; but as the adopted name honors a good early botanist, there would probably be no disposition to change, even were there no other reasons.

In regard to Dr. Mitchell, Dr. Gray says, "Linnæus had another correspondent in Dr. John Mitchell who lived several years in Virginia, where he collected extensively; but the ship in which he returned to England, having been taken by pirates, his own collections, as well as those of Governor Colden, were mostly destroyed." He seems to have come to Virginia about 1700. He resided about seventy-five miles from Richmond, at Urbana, on the Rappahannock. He appears to have resided there for a number of years, for we find John Bartram, under date of June 3, 1744, answering a letter, telling Dr. Mitchell, he passed through his country "in 1738," and should have been pleased if he had been acquainted with him then. Mitchell was well acquainted with the Duke of Argyle, Lord Bute and others, and when sending Bartram an order for plants and seeds for them quaintly remarks, "This is the only way I ever knew botany to be of any service to anybody; for botany is at a very low ebb in our country since the death of Lord Petre." It is pleasant to reflect since this, on how many ways botany is of value now, and that it does not depend for its success in these days on the patronage of any one man, however good or great he may be.

As already noted its common name is "Partridge berry." A lady, Helen E. Watney, writing to the "London Gardeners' Chronicle" in 1879, says: "The general name for these berries is 'cats' eyes,' because the two calyces marking the two ovaries appear on the same fruit, which is the joint product of two flowers. Why the plant is called Partridge berry I do not know." Emerson in his "Trees and Shrubs of Massachusetts," says, "it furnishes food for the Partridge and other birds which remain in our climate during the winter." It may be here remarked that the flowers appear about mid-summer, and the berries which follow continue, if they are not devoured, till the flowering time next year.

It is remarkable that a plant so attractive in so many ways should not have become more attached to the public mind, or received more attention from polite writers, but the author can recall no instance in American poetry or general literature in which the Partridge berry plays a conspicuous part. The discovery of the white berried form was first made by Miss Kate Fisher Kurtz, of York, Pa., and proved a source of great delight when communicated to Prof. Asa Gray.

Rafinesque says the berries are used in New England as tea, to cure dropsy and gout, and in North Carolina are a popular remedy in diarrhœa and dysentery.

EXPLANATIONS OF THE PLATE.—1. A Pennsylvania plant drawn in June. 2. The exserted styles. 3. Portion of another plant with included styles, and exserted stamens. 4. A berry with "cats eyes," and, as often occurs, a pair of leaves united with the fruit.

WILD FLOWERS AND NATURE.

THE FIRST FLOWERS OF SPRING.

Yes, 'twas the spring; and the gray willow now
And the red-flowering maple bloomed again—
The alder hung its tassels o'er the brook,
Freed from its thrall.

HOWARD WORCESTER GILBERT.

ABNORMAL RUDBECKIA.—The writer when young in botany, sent to the late Prof. Asa Gray, a specimen of *Echinacea purpurea*, which instead of the usual purple ray petals, had them greenish; and instead of a pistil a little branch, with numerous small flower buds, came from the centre of each floret. His reply was very interesting. "It is a case of a flower gone crazy." On the table is a specimen of *Rudbeckia hirta*, an ally of the *Echinacea*, which exhibits similar "craziness." Such cases afford valuable lessons in morphology. They teach that a flower, or a floret in a composite flower, is but an arrested branch. In these instances the power, whatever it be, that decides whether an embryo cell shall be a flower or a branch was weak in purpose, and had started to make a branch before it had fully decided that it should be flower. This is speaking metaphorically, but metaphors in these cases, give the best explanation.

ROCKY MOUNTAIN DOUGLAS SPRUCE.—A correspondent of MEEHANS' MONTHLY, writing from Chester, England, desires to know whether the *Abies Douglasii*, of Colorado is distinct from the same species found on the Pacific coast, and whether the Rocky Mountain tree is as good for timber purposes as the one from the Pacific. The latter question is one to which both yes and no can be answered. The Rocky Mountain tree is a much slower grower than the one on the Pacific and does not grow by any means so tall. If long, straight, rapid-growing poles are desired, the Pacific coast species is decidedly the best; but as for the quality of the timber, the Colorado one is said to be much more durable. When used as railroad ties, it is almost as indestructible as the Eastern *Arbor Vitæ*, which is saying a good deal. An advantage in the Colorado form is that it would endure without injury a very much lower temperature than the one from the Pacific coast. It is rather remarkable that botanists have not made the Colorado form into a distinct species as they have with some of the other spruces and pines of that region. In cultivation, as our Chester correspondent well remarks, they appear so distinct that even ordinary nursery laborers can see the difference.

VITALITY OF GIRDLED TREES.—Prof. W. H. Ragan, Secretary of the Indiana Horticultural Society, speaks of a Scotch pine tree which had been girdled for many years, and yet continued on growing as usual; the upper portion of the tree is described as being five or six times thicker than the part below; the lower portion never seemed to increase in size after the girdling had been once effected—it is only the upper portion that continues to increase in diameter. Any tree may have the bark completely stripped off of it during the few weeks near midsummer, and it will make a complete new layer without injury whatever to the tree,—but frequently with great benefit. This has been often remarked in deciduous trees, but we do not know of any case, except in coniferous trees, where trees will live as this has, not only when the outer layer of bark but the living layer of wood also have been destroyed.

THE PERSISTENCY OF BULBS.—As a general rule bulbs are annual — a new bulb growing every year in the place of the old one. Those who grow gladioluses are well aware of this fact. Sometimes, however, some bulbs are very persistent. A statement is made in one of our exchanges, "that a Persian Cyclamen is known to be 23 years old, and shows every evidence of much greater longevity."

NATURE AS A TEACHER.—The following intellectual treat from the pen of Mr. Ernest Walker, of New Albany, Indiana, will be read with interest. It did seem to the writer of the paragraph criticised that as in " in nature " the Magnolia glauca and some other trees are never found but in swamps, and " man " found out the tree did better in dry than in moist ground, it was man and not nature who taught us that lesson. Still, what is natural and what is unnatural is capable of so many interpretations, that possibly no one can object to the manner in which Mr. Walker so ably puts the question :—

"I will have to take the MONTHLY to task for the closing comment in the article "Vigor of Introduced Plants," given on page 149, October number, 1892, in which it says : "The cultivator can not learn much by taking nature as a pattern of propriety." With what goes before I agree. Nature never makes conditions to suit individuals, but individuals to conform to her conditions, or within certain limits select from the infinite variety of her conditions, the one or ones most suitable.

I object to the closing statement, not because there is not a good deal of truth in the assertion as it reads, but because some will be apt to substitute *teacher* for and as synonymous with pattern of propriety. Nature is not always a pattern of propriety, but is always, I have found, the best of teachers. Some look for positives when nature as often instructs by negatives. Many are inclined to limit the term nature to a few facts connected with wild plants in their native haunts. But I claim all is nature that results from conditions beyond man's control, even though the plant be cultivated in a garden. For instance, roses when the cool weather of fall comes take on a glory scarcely dreamed of during the hotter days of summer. It is plainly due to the moister nights and cooler temperature of autumn. The gardener catches the hint and takes it into the green house. In this he has learned from nature. In the case of marsh plants nature may fail us as a pattern, but never as a teacher. The seeds germinate more readily under these conditions is said to be the reason these plants are confined to those places. That's a lesson for the gardener from nature. While the seeds germinate better in the moist ground the plants thrive better in dryer soil. Now I'll venture the discovery of this fact originally came from nature. Take the *Saururus cernuus* or almost any simi-aquatic. They grow in shallow streams or in the edges of marshes. While in spring or early summer they will be found in water, yet later when the dry weather comes the streams or borders of the pools become dry ; and in the case of the lizard-tail, some plants growing in fairly dry soil, which I saw last summer, were stronger than those growing in the water. In the case of the *Dianthera Americana*, I have never seen any striking advantage exhibited by plants growing in soil out of the water over those growing in the water. The water plantain varies in some cases. I remember having seen better in the dryer soil, some feet back from the water's edge than in the water, during the summer. In these plants it seems to be not the growing in or out of water that is important to the presence of the plants in these places, so much as the moist conditions of the air resulting from proximity to water. All this is useful and suggestive to the florist.

As for plants sometimes thriving better in other places than their native home, this does show that these plants in nature have not found the conditions most favorable to their vigor. But it does not prove that within the original limits of their native land they had not sought and found the locations best suited to their needs. Take away the ocean's barriers to their wanderings and long ago they would have been natives here and science would have recorded the fact that the conditions here were more suited to their needs than those elsewhere within the limitations set by nature to wandering. I believe that the majority of plants have sought and found their proper homes. If they be found to thrive better in another place, take away the barriers to their spread and they would not be long in finding these more favorable homes."

LARGE PLANE TREES, OR BUTTONWOODS.—Mr. William T. Harding, of Mt. Holly, refers to a paragraph in the former " Gardeners' Monthly," which gives a specimen growing on the farm of Henry Peters, Upper Sandusky, Ohio, as being about 160 feet in height, and at 4 feet from the ground the trunk measured 48 feet in circumference. At the height of 15 feet from the base, the trunk branches into eight large column-like shafts, the round measurement of which is from 10 to 15 feet. The spread of the branches covers an area of 700 feet. Mr. Harding, who has been a world-wide traveler, both among the large Mammoths of California and of Australia, considers this the largest tree of any kind that he has ever saw. In addition to this note, Mr. Benj. Heritage of Mickleton, N. J., refers to one in Monroe Co., Ky., which is also 48 feet in circumference. At Muhlenberg, Ky., is a white oak 36 feet in circumference, and a black oak 18 feet.

NOTING FACTS IN NATURAL HISTORY.—Those who are fond of watching the operations of nature should never go out without a note book, and mark down at the time the interesting points worth recording. It is too much the habit to depend on memory, and hence many imperfect observations are recorded which are rather injurious than otherwise to the progress of science. We give with this an illustration of an observer who is in the midst of a Southern Cypress swamp, and during his observations has come across some interesting facts suggesting thoughts worthy of recording. As we see in the picture, he doesn't wait until he gets home to do the work ; but at once, with pencil and paper, is setting down at the moment just what occurs to him. It is such accurate and careful observers as these who do the most service in the advancement of science. The remarkable point he is probably recording, is a shoot to make a tree from a cypress knee, which supports an English hypothesis, that these knees are in the nature of suckers.

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JACK PINE —According to Mr. Johnson, of Snow Flake, Mich., this is the common name in that part of the world of *Pinus Banksiana.* It has always been a matter of surprise that this beautiful tree has not been more popular with cultivators, possibly on account of the difficulty of getting seed. In the Northeastern States it is only a small, scrubby bush, scarcely worth the name of tree, but the form that grows in northern Michigan, is very different. It is one of the most graceful and handsome of the smaller class of coniferous trees.

THE RANGE OF THE HOLLY.—A Washington, D. C., correspondent would be glad to know how far north the native Holly has been found hardy or indigenous. He does not remember seeing any specimens in Central Park, New York, and therefore inclines to the belief that it may not be found hardy there. Our own opinion is that in sheltered woods, where it would not be exposed to the sun in winter, it would be found perfectly hardy, even in Canada. But all this is a matter for actual experience. Shade aids hardiness in Evergreens. The English Holly is hardy far north when not in the full sun.

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INTENTIONAL SECOND EXPOSURE

MITCHELLA REPENS.—The flowers have a pleasing waxy consistency, and a delightful fragrance; while the bright green leaves, continuing all the winter season, exposing brilliant scarlet berries, often in profusion, should suggest at least as many themes as the Holly or the Bay. In modern scientific literature it is however conspicuous. An interesting fact is that it is so often found in companionship with the plant named in honor of Linnæus, *Linnæa borealis*. In many notes of collectors, now before the writer, extending from Maine to Michigan and Minnesota, this fact is recorded. In classification they are placed in separate natural orders, the Partridge berry in *Rubiaceæ* and the Linnæa in the *Caprifoliaceæ*, but after all the two natural orders have so much in common that it is not always easy to distinguish them. The most interesting fact in connection with the plant is the discovery of the dimorphism of the flowers, which seems to have been made about the same time by Prof. Asa Gray, and the present writer. The stamens in some flowers are exserted, in others they are included within the corolla, and the stigmas are exserted. Mr. Darwin experimented with these different classes in 1864, and found that they could be made productive by the use of their own pollen in each case. He refers also to Mr. J. Scott's experience in the Edinburgh Botanic Garden, where a single plant produced an abundance of berries. This is not the experience of the writer of this. Some years ago he found on the Wissahickon a plant covered with an abundance of snow-white berries. Anxious to cultivate so interesting a variety a large quantity was removed to his garden, where they are to this day, flowering profusely every year, but not producing one berry. On another part of his grounds is a plant of the normal red-berried form, which, since its removal to the garden, has not borne any fruit. Both of these are forms with exserted pistils.

COLOR CHANGES IN THE MONOTROPA.—"Ruth Raymond," Crawford Co., Pa., remarks: "It is nothing uncommon to find specimens of *Monotropa uniflora* slightly tinged with pink. Two years ago I found several clusters of a much deeper tint than any previously found; indeed, the stems and ovaries were red, the petals varying through lighter shades to almost blush. I supposed the color due to the effects of frost, as it was then late in October, while the normal time of blossoming here is July or August. Some of the specimens were put to press and not thought of again for a fortnight; then, instead of having turned black as they commonly do in a day or two at most, the peculiarity in color which had at first attracted my notice was still retained to a considerable extent; parts of the plant were dark, others scarcely changed. This feature aroused my curiosity and the specimens were then daily cared for until completely dry. Then they were dark but with a reddish shade by which they could readily be distinguished from others of the species.

Last year I watched their appearance eagerly, and was pleased to find some early in September before any chilling breezes had come, thus proving that the variation in color was not caused by the cold weather. There were young plants still nestled in the leaf-mould and old ones with heads erect, the color equally noticeable in either case. Specimens of *M. Hypopitys* of a rich red, instead of "reddish" as described by Gray, were found at the same time. As this species is new to me, I am not sure that the deep color is uncommon. They were growing in a wood composed principally of maple, oak, and beech trees, but were invariably found near the latter.

It is known that these plants derive their nourishment from decaying vegetation and to some extent from living matter. The question is, what causes the change not only in color but in the general structure of the plant, enabling it to retain its original appearance for so long a time after the process of drying has commenced."

VARIATION IN FERNS.—Miss Pinckney remarks that in South Carolina, the only really valuable fern is *Adiantum pedatum*, the common maiden-hair fern. It often loses the semi-circular form of the pinnule so as to take on at times something of the appearance of its sister species, *Adiantum capillus-veneris*.

THE BIRD'S FOOT VIOLET.—Mr. T. C. Thurlow, of W. Newbury, Mass., notes that in that part of the world the *Viola pedata* grows abundantly in the poorest ground—dry, exposed places where very little else will grow.

GENERAL GARDENING.

SPRING BEAUTY.

Of all the months that fill the year,
  Give April's month to me,
For earth and sky are then so filled
  With sweet variety:

The apple-blossoms' shower of pearl,
  Though blent with rosier hue—
As beautiful as woman's blush,
  As evanescent too.—MISS LANDON.

PRUNING LARGE TREES. — Wherever one travels he may see evidences of the improper pruning of large trees,— snags many inches in thickness are left which rot down to the main trunk—the rot not stopping there, but penetrating the whole body of the tree; or if a side branch is taken off, it may be several inches from the trunk, and this rots in like manner. All branches should be cut as close as possible to the main trunk and then painted to prevent damage by water until the wound shall have thoroughly grown over. One would think that any one going through the world with his eyes open, would easily see the result of this ignorant pruning and profit by experience against such bad practice, but it seems not to be the case. Although any one may see across the street his neighbor's trees dying from this kind of mutilation, he will in all probability have trees done in the same way. Trees in public gardens and parks especially suffer from this ignorance. Trees are planted comparatively close when they are young, in order to make an immediate shade. Not having the opportunity to branch in a lateral direction they naturally go upwards and are then considered too lofty and are headed back, with the mistaken idea that this will cause the lateral spread. This also any one might see from experience is a fallacious idea. Trees try to grow upwardly all the stronger for this kind of heading back, and then usually rot within a few years afterwards. A judicious thinning when young gives the tree a chance to have its natural characteristic, which is to spread laterally as well as vertically. Very often for street trees kinds are selected that have a tendency to grow vigorously upwards, because of their affording shade somewhat earlier in life than trees which persist in spreading. The temptation to cut back usually follows from employing this class of trees. It will be much better to select at first those which have greater natural tendency to spread, although they may not grow so rapidly at first. It is possibly the rage for fast growing trees, which induces this improper selection, and which finally leads to the destruction of all street trees.

MACADAM ROADS.—For all the talk about macadam roads one may travel a long distance before seeing one that is constructed on the principles that Macadam himself laid down. The underlying principle of his system was that the stone should pack together so closely that, no matter what kind of a vehicle drove over the road, not one of the stones would be disturbed; but, in our so-called macadam roads, vehicles crush and grind the stones in every direction. Macadam's plan was to have all the stones that formed the upper stratum of the road so small that all could go through a two-inch ring. This small size of stone when thoroughly rolled, pack together so tightly that it would take a very small wheel indeed to drive the stones apart. In this case, there is no grinding or crushing of the stones, and the road bed has to do nothing more than bear the dead weight of the vehicles. When these roads needed repairing, which under his system was very seldom indeed, the surface would be torn up by a pair, or even four horses with a heavy drag harrow, and the new resurface applied. When rolled down this was almost as good as a new road. It would be amusing, if it were not so costly to the tax payers, to see the manner in which the so-called macadam roads of our country are repaired, especially in the vicinity of large cities, certainly, in the vicinity of Philadelphia. After some three or four inches are worn away, the custom is to put three or four inches of broken stone, some of the stones nearly as large as goose eggs over the road surface. The wheels then grind up these stones or push them away in every direction, so that in the course of a few months like coffee in a mill, these are ground completely to powder. Within the knowledge of the writer, a resurfacing of this character, costing $3000, placed on a road 80 feet wide and 600 feet long, was ground to mud within twelve months. Such macadam roads as these, and such repairing of the so-called macadam roads, are the best illustration of municipal ignorance, possibly, that could be adduced. In the management of public affairs we expect more loss than in private ones, but the ignorance displayed in the making and care of macadam roads beats all.

Fibrous Roots.—We find a surprising want of knowledge as to what is a fibrous root. Really a fibre, as technically understood, is not a root any more than a leaf is a branch of a tree. Roots, to be sure, are formed out of fibres, and when a tree has a number of small roots, it is not uncommon to say, that it has an abundance of fibres. Fibres are the small white, thread-like, that are principally engaged during the growing season in gathering and collecting food for the plants, just as leaves do the same work for the branches. Towards the fall of the year nearly all these fibres die; only a very few that are present, live over until the next season. They are not roots. If, however, one lives over, it eventually becomes a root. Fibres, as thus limited, are of no sort of benefit to a tree in transplanting. What is needed is an abundance of healthy, vigorous, one or two year old roots. Sometimes people say that in order to transplant a tree successfully, it is well to dig around it one year; first cutting off the main roots, and in this way getting a number of "fibres" for the next year. It is in this sense that the word tends to mislead. Fibres are not thrown out when these larger roots are cut, but small roots.

One cannot have too many of these small one or two year old roots in transplanting. They are full of life and vigor, and aid materially in supporting a plant. But fibres, as limited in their definition in this paragraph, are of absolutely no consequence, and in many respects are rather an injury than a benefit. We have known evergreen trees moved with what were supposed magnificent roots, that is to say, there were thousands of real annual fibres and yet die afterwards; no one seeming to understand why it should be so; but the trouble is, that this large mass of sponge-like threads prevents the earth from coming into contact with the large roots, and then, they are far more of an injury than a benefit.

Pruning and Transplanting.—There is a difference of opinion among some planters as to the propriety of pruning in the branches of fruit trees when they are planted. There is no question among those who have had extensive experience,—they all concur as to the wisdom of pruning in under most circumstances when trees have been transplanted. It is chiefly from the evaporation of their juices faster than the roots can draw in sap to supply the place of that waste that they die, and pruning in the branches prevents too great an evaporation, and that is the reason why the practice of pruning in is to be commended. When the trees have been planted without such pruning, in the pear, for instance, it is not unusual for them to remain a whole season and send out only a few leaves, and without making any growth of branches, indeed, sometimes pear trees remain the whole season alive, without making any leaves at all. They are just able to meet the demands of evaporation, leaving nothing for growth. Whenever a transplanted tree does not show signs of pushing out leaves when the proper time comes to make leaves, the pruning knife should at once be called in, and the branches pruned. Hundreds of transplanted trees which die might be saved by a judicious use of the pruning knife.

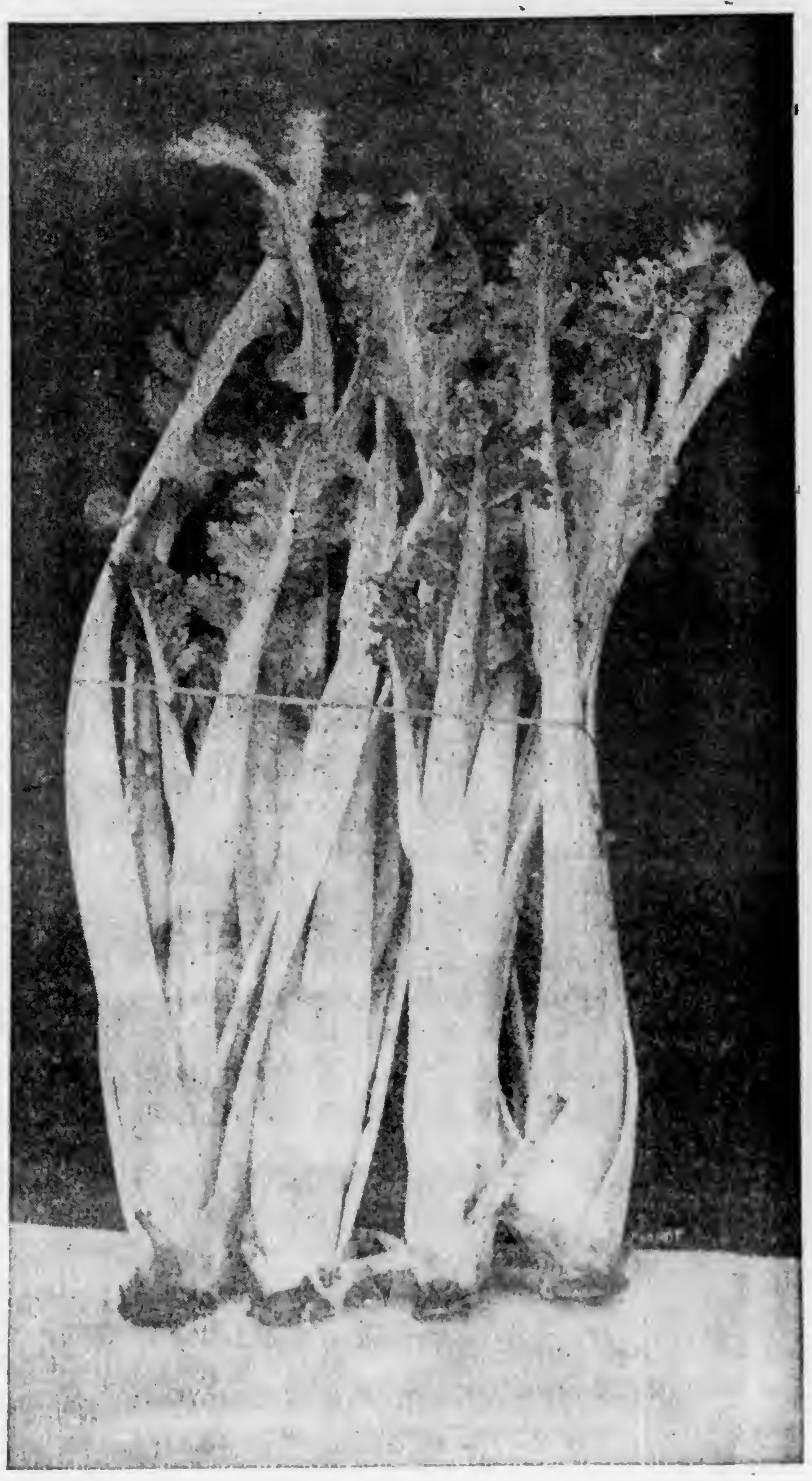
Succession in Magnolias. — The Yulan or Chinese Magnolia—*Magnolia conspicua*—is the first to open, blooming before the leaves expand, —though Soulange's hybrid, magnolia Soulangeana—is not more than a day or two behind it. The dwarfer kind and newer, Hall's magnolia, *M. stellata*, is almost co-eval with them. Just as they fade magnolia purpurea opens, closely followed by *M. Frazeri*. This is barely gone before the umbrella magnolia, *Mag. tripetela*, comes out. Before these have scarcely dropped, the cucumber magnolia, *M. acuminata*, opens. These are not, however, showy, and the yellow petals will often be seen

on the ground, before observed on the trees. In this line there are successions of flowers from April to the end of May. The beautiful red cones and seeds which many have in the fall, are as interesting as the blossoms, making the magnolia admired through the whole season. A few good kinds, like *Mag. grandiflora*, *M. macrophylla*, and some of the newer Asiatic kinds, are omitted from the list, because the exact chronology of their flowering periods, has not been carefully noted.

Rubus deliciosus.—Some attempt has been made to introduce the Rocky Mountain Raspberry into cultivation. Its merits rest chiefly on its specific name. The original discoverer, Long, or at least some of the botanists on Long's expedition, pronounced the fruit delicious. In the writer's own exploration in the earlier times of Colorado, its delicious character was only apparent when those who gathered them were particularly hungry; but occasionally some fruit would be quite agreeable. Another feature seemed to be that there were never many fruit at a time on the plant. It would be a pretty large bush from which a pint of berries could be gathered. It would be well to know from those who may have had it in cultivation in the East, whether its character is at all improved by cultivation. To the general observer, the plant looks more like a mock orange than any of the ordinary forms of raspberry; and as an ornamental shrub, ought to be particularly desirable.

Salt as a Manure.—In a general way every one knows that salt is a good fertilizer for the asparagus plant. It is not so generally known that it is very useful in other instances. Its chief advantage is in attracting moisture from the atmosphere, therefore it is an admirable help to fertility in soils that are likely to become comparatively dry. In heavy wet soils salt is worse than useless. For lawns, salt has been found of great value; and as before noted, especially when it is likely to dry out in summer time. It has been common to say, in lawn practice, to scatter it over the lawn so that it would look like one of the light sprinklings of snow.

Fibre plants.—Mrs. Kellerman, of Columbus, Ohio, referring to the textile value of the fibre of *Hibiscus moscheutos*, sends specimens of extremely strong fibre, obtained from our common milkweed.



SEA KALE.--SEE P. 60.

the road surface. The wheels then grind up these stones or push them away in every direction, so that in the course of a few months like coffee in a mill, these are ground completely to powder. Within the knowledge of the writer, a resurfacing of this character, costing $3000, placed on a road 80 feet wide and 600 feet long, was ground to mud within twelve months. Such macadam roads as these, and such repairing of the so-called macadam roads, are the best illustration of municipal ignorance, possibly, that could be adduced. In the management of public affairs we expect more loss than in private ones, but the ignorance displayed in the making and care of macadam roads beats all.

FIBROUS ROOTS.—We find a surprising want of knowledge as to what is a fibrous root. Really a fibre, as technically understood, is not a root any more than a leaf is a branch of a tree. Roots, to be sure, are formed out of fibres, and when a tree has a number of small roots, it is not uncommon to say, that it has an abundance of fibres. Fibres are the small white, thread-like, that are principally engaged during the growing season in gathering and collecting food for the plants, just as leaves do the same work for the branches. Towards the fall of the year nearly all these fibres die ; only a very few that are present, live over until the next season. They are not roots. If, however, one lives over, it eventually becomes a root. Fibres, as thus limited, are of no sort of benefit to a tree in transplanting. What is needed is an abundance of healthy, vigorous, one or two year old roots. Sometimes people say that in order to transplant a tree successfully, it is well to dig around it one year ; first cutting off the main roots, and in this way getting a number of "fibres" for the next year. It is in this sense that the word tends to mislead. Fibres are not thrown out when these larger roots are cut, but small roots.

One cannot have too many of these small one or two year old roots in transplanting. They are full of life and vigor, and aid materially in supporting a plant. But fibres, as limited in their definition in this paragraph, are of absolutely no consequence, and in many respects are rather an injury than a benefit. We have known evergreen trees moved with what were supposed magnificent roots, that is to say, there were thousands of real annual fibres and yet die afterwards ; no one seeming to understand why it should be so ; but the trouble is, that this large mass of sponge-like threads prevents the earth from coming into contact with the large roots, and then, they are far more of an injury than a benefit.

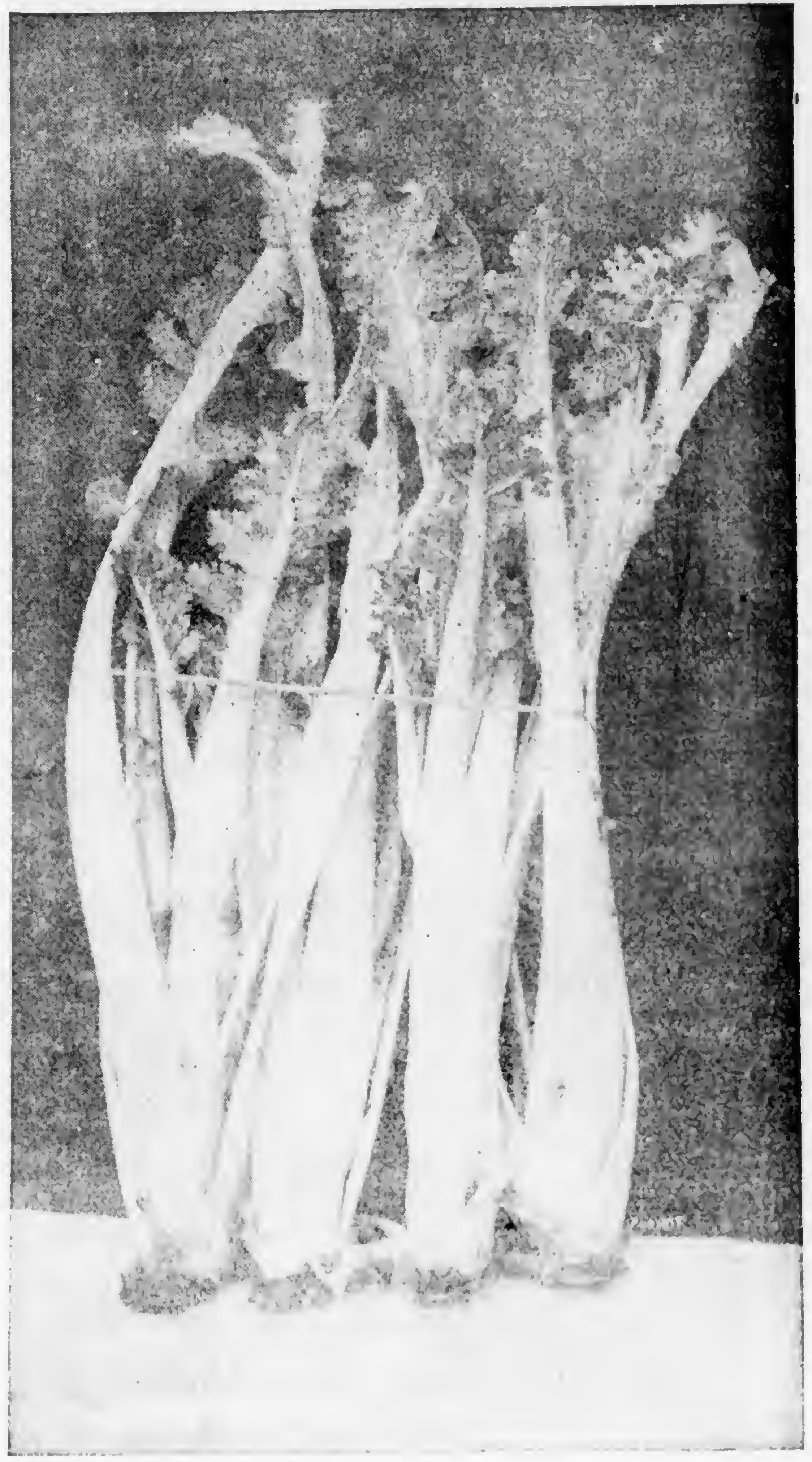
PRUNING AND TRANSPLANTING.—There is a difference of opinion among some planters as to the propriety of pruning in the branches of fruit trees when they are planted. There is no question among those who have had extensive experience,—they all concur as to the wisdom of pruning in under most circumstances when trees have been transplanted. It is chiefly from the evaporation of their juices faster than the roots can draw in sap to supply the place of that waste that they die, and pruning in the branches prevents too great an evaporation, and that is the reason why the practice of pruning in is to be commended. When the trees have been planted without such pruning, in the pear, for instance, it is not unusual for them to remain a whole season and send out only a few leaves, and without making any growth of branches, indeed, sometimes pear trees remain the whole season alive, without making any leaves at all. They are just able to meet the demands of evaporation, leaving nothing for growth. Whenever a transplanted tree does not show signs of pushing out leaves when the proper time comes to make leaves, the pruning knife should at once be called in, and the branches pruned. Hundreds of transplanted trees which die might be saved by a judicious use of the pruning knife.

SUCCESSION IN MAGNOLIAS. — The Yulan or Chinese Magnolia—*Magnolia conspicua*—is the first to open, blooming before the leaves expand, —though Soulange's hybrid, magnolia Soulangeana—is not more than a day or two behind it. The dwarfer kind and newer, Hall's magnolia, *M. stellata*, is almost co-eval with them. Just as they fade magnolia purpurea opens, closely followed by *M. Frazeri*. This is barely gone before the umbrella magnolia, *Mag. tripetela*, comes out. Before these have scarcely dropped, the cucumber magnolia, *M. acuminata*, opens. These are not, however, showy, and the yellow petals will often be seen on the ground, before observed on the trees. In this line there are successions of flowers from April to the end of May. The beautiful red cones and seeds which many have in the fall, are as interesting as the blossoms, making the magnolia admired through the whole season. A few good kinds, like *Mag. grandiflora*, *M. macrophylla*, and some of the newer Asiatic kinds, are omitted from the list, because the exact chronology of their flowering periods, has not been carefully noted.

RUBUS DELICIOSUS.—Some attempt has been made to introduce the Rocky Mountain Raspberry into cultivation. Its merits rest chiefly on its specific name. The original discoverer, Long, or at least some of the botanists on Long's expedition, pronounced the fruit delicious. In the writer's own exploration in the earlier times of Colorado, its delicious character was only apparent when those who gathered them were particularly hungry ; but occasionally some fruit would be quite agreeable. Another feature seemed to be that there were never many fruit at a time on the plant. It would be a pretty large bush from which a pint of berries could be gathered. It would be well to know from those who may have had it in cultivation in the East, whether its character is at all improved by cultivation. To the general observer, the plant looks more like a mock orange than any of the ordinary forms of raspberry ; and as an ornamental shrub, ought to be particularly desirable.

SALT AS A MANURE.—In a general way every one knows that salt is a good fertilizer for the asparagus plant. It is not so generally known that it is very useful in other instances. Its chief advantage is in attracting moisture from the atmosphere, therefore it is an admirable help to fertility in soils that are likely to become comparatively dry. In heavy wet soils salt is worse than useless. For lawns, salt has been found of great value ; and as before noted, especially when it is likely to dry out in summer time. It has been common to say, in lawn practice, to scatter it over the lawn so that it would look like one of the light sprinklings of snow.

FIBRE PLANTS.—Mrs. Kellerman, of Columbus, Ohio, referring to the textile value of the fibre of *Hibiscus moscheutos*, sends specimens of extremely strong fibre, obtained from our common milkweed.



SEA KALE.--SEE P. 60.

INTENTIONAL SECOND EXPOSURE

SPECIMEN FUCHSIAS.—Plant growing has become almost a lost art. Very few understand enough of physiology and the nature of plant growth sufficiently, either as a science or an art, to know how to make a beautiful plant out of a rough and straggly one. One can see this lack of knowledge even in the popular Chrysanthemum culture. Although some tolerably fine specimens may be seen occasionally at Chrysanthemum shows, one may ask in vain any of the exhibitors why it should be that two plants of exactly the same variety in the hands of two different cultivators should show flowers considerably larger in one case than another. The one who grew the large flowers could not tell why the others were small; nor could the one growing the small flowered plants tell why the other flowers were superior. Plant growth in such cases is simply a matter of chance. We give with this an illustration taken from "The Gardeners' Chronicle" of how a plant grower, who is master of the art, would grow a Fuchsia. It will be seen that in the whole plant, from base to apex, healthy leaves and fair sized flowers are just as abundant at the base as anywhere else. Nature would not do this for us. The result is wholly the work of a highly successful cultivator. We question very much whether there is to-day in America a dozen plant growers who could produce a specimen of a Fuchsia so perfect in every respect as this one is.

SPECIMEN FUCHSIA.

FOREST PARK, SPRINGFIELD, MASS.—In the great movement for parks and breathing places, a number of our leading towns and cities are now in friendly contest. Springfield, Mass., is one among the number which boasts of a beautiful one. It goes under the name of "Forest Park," overlooking the Connecticut river, and comprises 340 acres, and of this 75 acres was first given by Mr. O. H. Greenleaf, of that city. To this Mr. E. H. Barney added 109, on condition that the city secured 92 others. A number of influential citizens convened, purchased and gave to the city other tracts, making 340 in all. Among the magnificent trees which adorn this Park, specimens of the common Chestnut tree are said to be preeminent, some of them being 100 feet high and six feet in circumference. There are a number of artificial ponds on the grounds, stocked with water plants. Mr. Barney, who is still living, still spends much money in beautifying the Park. His mansion stands in the midst of the Park. A monument, intended as a lookout for visitors as well as a memorial of his son, is now being constructed in the Park at a cost of $40,000.

ROCKERIES FOR SMALL GARDENS.—One of the pleasantest features in gardening for small places is a rockery, that is say, small banks, or bluffs made of projecting stones and earth, in which certain kinds of plants love to grow. A considerable degree of taste is, however, required in order to make these little rockeries ornamental. The great idea should be to make them look as natural as possible. It is not uncommon to see a little mount of stones and earth of this character in the center of a grass plot far away and disconnected with any other artificial features. These rarely look well, they are entirely out of place, but if they can be made to appear as if they were being projected from some bank, or as if they sprang out of the ground in some natural way, the effect is very different. Under the shade of trees especially, a little rock garden can be made particularly effective by the use of ferns and other shade loving plants. The great effort in all these attempts should be to make art and nature seem to gradually merge the one into the other. It is a great dividing line, the gulf between the two, which renders hideous very often that which might be beautiful, both from a natural and artificial point of view.

LILIES OF THE VALLEY.—It is not generally known that these beautiful flowers are produced to much better satisfaction under the shade of trees than elsewhere. Wherever there is a clump of trees no better plant can be introduced to grow under them than the Lilies of the Valley. In order to get them, however, to best advantage under the shade of trees, they require an annual top dressing of manure, or some other rich soil. This is after all doing good to the trees; for on lawns and in places somewhat under cultivation, where the leaves of the trees are gradually cleaned up for neatness' sake, they suffer very much for want of food. When the Lily of the Valley is grown in this way, therefore, the trees get a portion of the food as well as the plants, and thus we do ourselves a double service by adding to the health and longevity of the trees while cultivating the beautiful flowers beneath them. More fine old trees die early from want of food than from any other cause.

EASTER LILIES.—In the old world the Easter Lily is the White Lily, *Lilium candidum*, or the variations of the White Japan Lilies. In our country the *Calla* or *Richardia Ethiopica* usually receives this designation. The word Easter is a corruption of Eostro, who was an Anglo-Saxon goddess, worshipped in the month of April in Britain, with peculiar ceremonies. When the island was converted to Christianity, the name was retained and the Christian festival supplanted the older ceremonies.

FRUITS AND VEGETABLES.

SOWING SEEDS.—Those who deal in seeds are frequently puzzled at the reports of some purchasers that seeds bought of them fail to grow. Seedsmen who have had themselves practical experience, understand why, but the majority have not had this advantage, and the whole subject remains a puzzle to them. One of the chief causes of the failure of seeds to grow is that they are sown too deep. Almost every one has heard, if they have not actually experienced, that seeds several inches deep in the ground, or perhaps in some cases several feet, will remain without germinating for numbers of years; while the seeds, under ordinary circumstances, would naturally have grown the year after maturity. The reason for this is that they are wholly excluded from the atmosphere; the converse of this proposition is that seeds require atmospheric air in order to germinate well, if they are near the surface of the earth where there are extremes of temperature; but with atmosphere excluded they simply rot. Perhaps no better illustration of the necessity of atmospheric air, in order to get seeds to germinate, is furnished than by a visit to some old fruit tree—say, for instance, the cherry, where the seeds have fallen and covered the surface of the ground. In early spring these cherry stones will be observed to be sprouting in every direction; while seeds from the same tree set by the nurserymen, will fail to grow at all—the reason being that they were planted so deep as to exclude the atmosphere. What is true of these larger seeds is equally true of small garden seeds. Where they fail to germinate, in the vast majority of cases it is from being sown too deep. The late Peter Henderson so well understood this that he advised many of his customers to simply tramp the seeds into the ground. He would choose a dry day to sow when the earth would rather powder under pressure than become pasty; the garden line would be stretched; the seeds sowed either on the surface or in a mere scratch, and then tramped in with the feet along the surface of the line. Very few failures ever occur under these circumstances. As to the seeds being bad, every purchaser should examine carefully before sowing, in order to ascertain whether they are good or not. With a common pocket lens in hand,

and the seed carefully divided, no one could fail to be satisfied whether the seed was in germinating condition or not—imperfect seeds being yellowish ; while sound seeds, usually, being of ivory white. In brief, seeds require, to germinate well, atmospheric air, moisture, and some shade ; with these essentials very little more knowledge is required as to how to germinate seeds successfully.

SEA KALE. — In recent issues, notice was taken of some excellent but neglected vegetables worthy of a better fate. Sea Kale was one of these. Prof. Cote, of the Oregon Agricultural Experiment Station at Corvallis, finds it easy to cultivate there,—and the illustration on p. 57 shows how well he succeeds. The seeds were sown April 10th ; on the next February 12th transplanted in rows 10 inches apart. The crown buds were cut out at transplanting to prevent flowering. They were set in an eight inch trench, and the crown an inch below the surface. The plants made a strong growth during the summer. In December the earth about them was loosened by a digging fork, an inverted nail keg set over each plant, then stable manure and leaves, fifteen inches deep, over the whole. By March 4th, under this light forcing, the plants were ready for table use.

AN ERROR IN TREE-PLANTING.—The following timely note comes from Mr. Ernest Walker, of New Albany, Ind.

"Nothing connected with trees or an orchard is of more importance than careful setting of the trees. It is a kind of sowing, and as is the sowing so will the harvest be.

In places where the sub-soil is of the heavy impervious sort and not drained, it is a serious mistake in setting trees to dig great deep holes and fill them with light, rich soil. Such holes become drainage pits for the water of surrounding soil and, except in dry weather, will be a fourth or half full of water. Trees planted in them are theoretically shown the kindest treatment, but practically are subjected to killing cruelty.

When set in the fall they are liable to be either drowned out or frozen out. And if they survive, the water in the bottom of the hole is as a knife to the formation of the deep and anchoring roots.

Select a better piece of ground or else drain that at hand, is the writer's first recommendation ; if neither can be done, however, the advice then would be, don't make a bad matter worse by digging holes, rather make mounds on which to set the trees.

This has been done and with great success. One of the finest orchards of Ben Davis apples in Indiana was planted after this method which might appropriately be called *surface-planting*.

The ground being undrained and heavy, instead of digging holes it occurred to the gentleman in planting his trees to try another plan. Accordingly after plowing the land three cartloads of soil were dumped at the spot where each tree was to stand. Having been smoothed off and formed into a low mound, on one of these each tree was set. Between the rows a little grading provided for the running off of most of the surface water.

In this orchard of ten-year-old trees, bearing twelve to sixteen bushels each, there was not a specked apple seen. Had the trees been set in the same ground according to the prevalent method, the probabilities are the kindest care would not have reaped such glowing rewards.

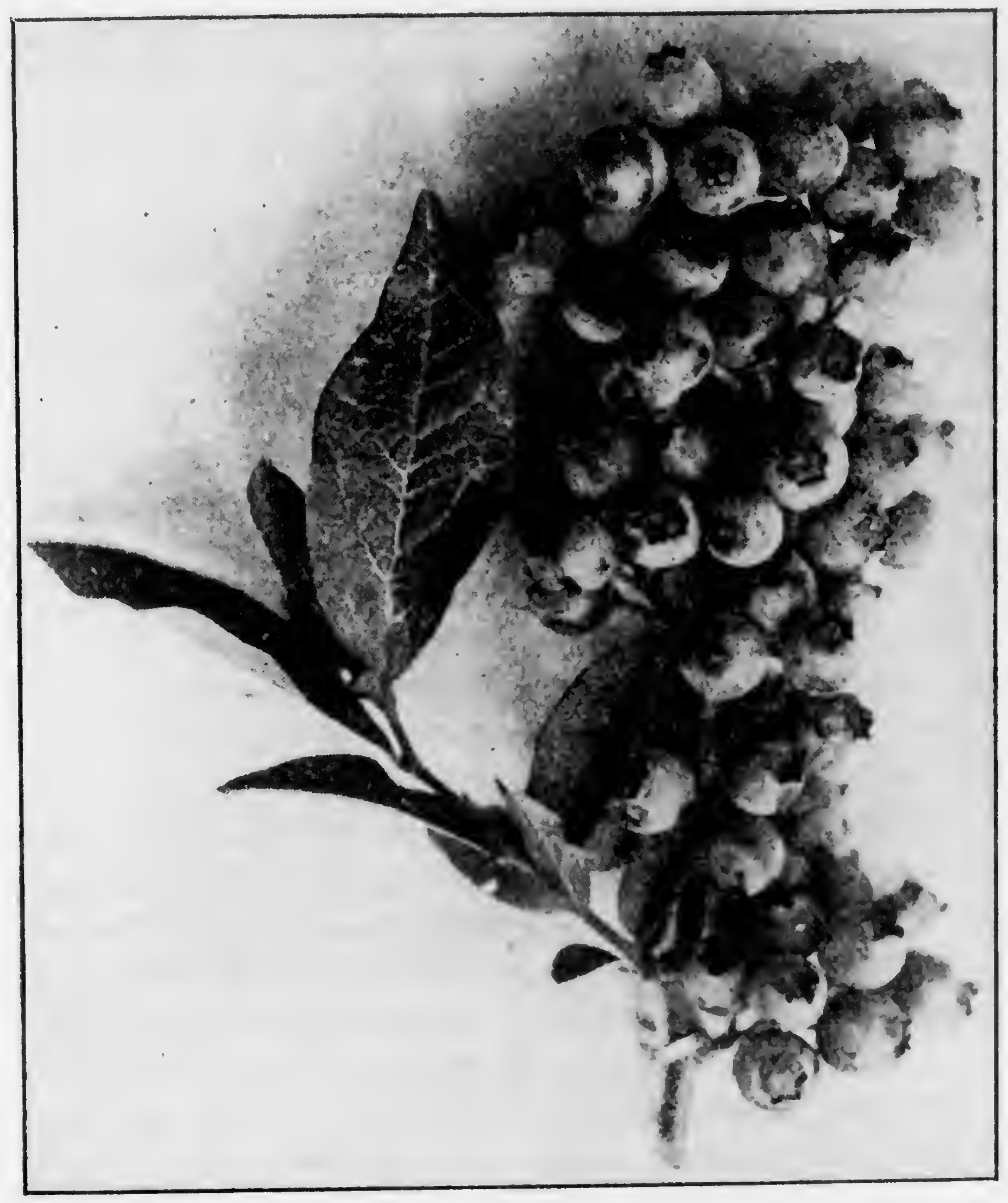
Some years have passed since the writer saw for the first time his theory reduced to successful practice, though entirely independently of any suggestion of his. Further observation and experience have confirmed the correctness of his view of the matter.

The writer would not be understood as recommending *surface-planting* for all soils. By no means. Only in flat, undrained, or rather wet land is it advised as largely compensating for natural disadvantages, out of which the planter may not otherwise see his way."

One of the finest apple orchards one of the conductors ever saw was in Indiana, where the land had been plowed into narrow and steep ridges, and the trees planted on the apex of the ridges. All trees hate water. Rich food, dampness and oxygen is what the roots require.

CHERRY CULTURE.—In an excellent report on experiments with cherries, Mr. John Craig, of the Experiment Farm, of Ottawa, Canada, speaks of well drained, sandy loam as being excellent for this fruit. A large number were planted for experiment,—one of a kind,—so as to judge of their comparative merits. They

were set 25 feet apart, kept clear of weeds by a horse cultivator up to midsummer, manured originally with good barn-yard manure, and later with unleached wood ashes, at the rate of about 125 bushels to the acre. Canada is especially favorable to the hardier varieties of cherry. It is interesting to note that one of the oldest varieties known to our cultivators, the Carnation, is regarded as still one of the healthiest and best—even meriting a trial, Mr. Craig says, where other kinds fail. He speaks of the variety, Griotte du Nord, as having been first introduced to America by Prof. Budd, from Silesia, not many years ago. It has, however, been in cultivation in the vicinity of Philadelphia for nearly half a century—possibly introduced by the late Peter Kieffer, whose name is attached to a well-known pear. The Montmorency is spoken of as in some sections superseding the Early Richmond. If this could be generally borne out, it would give this variety a good character, — for the Early Richmond in this part of the world continues to stand ahead of all competitors. It is one of the sour cherries—only used for table—and when a little over ripe, if one may use that expression, it is still rather acid when in a condition that would make other sour cherries palatable.



VACCINIUM CORYMBOSUM.

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THE CRANDALL CURRANT.—We have had a suspicion, from the description, that what has been sent out as the Crandall currant is nothing more than the Utah variety of the common Mo. currant, which has been on sale in leading nurseries in the East for the last quarter of a century. Mr. A. G. Heaver, of Boyre, Ontario, states in the "Canadian Horticulturist" that he has grown and fruited it, and finds that it is, precisely as we supposed it was, only the Mo. currant sent out at high prices, on account of its having been given a new name. Any one may give a plant a new English name,—and pay twice for the same plant.

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INTENTIONAL SECOND EXPOSURE

BIOGRAPHY AND LITERATURE.

SPRING FLOWERS.

'Tis sweet to love in childhood, when the souls that we bequeath
Are beautiful in freshness as the coronals we wreathe;
When we feed the gentle robin and caress the leaping hound,
And linger latest on the spot where buttercups are found;
When we see the bee and ladybird with laughter, shout, and song,
And think the day for wooing them can never be too long.
—ELIZA COOK.

LEWIS AND CLARK'S EXPEDITION. — We could not have placed our inquiry in relation to the proper spelling of Clark's name, into better hands than Prof. Coues, whose decisive note in MEEHANS' MONTHLY for January, finally settled the question, for we now find that the Professor has been engaged on the study of the Expedition under the command of Lewis and Clark, which went across the continent in 1804–5–6. The history of this Expedition is one of the most remarkable on record, and the curious facts gathered then relating to wild nature, show that the general features of the American continent will soon themselves be matters of history as little by little the press of civilization causes the original features to disappear. Even now, as he reads the details as given by these heroic travelers, one can scarcely imagine many of the facts related to ever have had a real existence, so rapid has been the advance of civilization over the whole continent. When rising from his blanket spread on the ground in a part of these weird regions, only twenty years ago, a Mexican ox driver remarked to the writer of this paragraph, that he hoped civilization would not be thrust on them too fast. To see it now the full force of the Mexican's fear can be well realized.

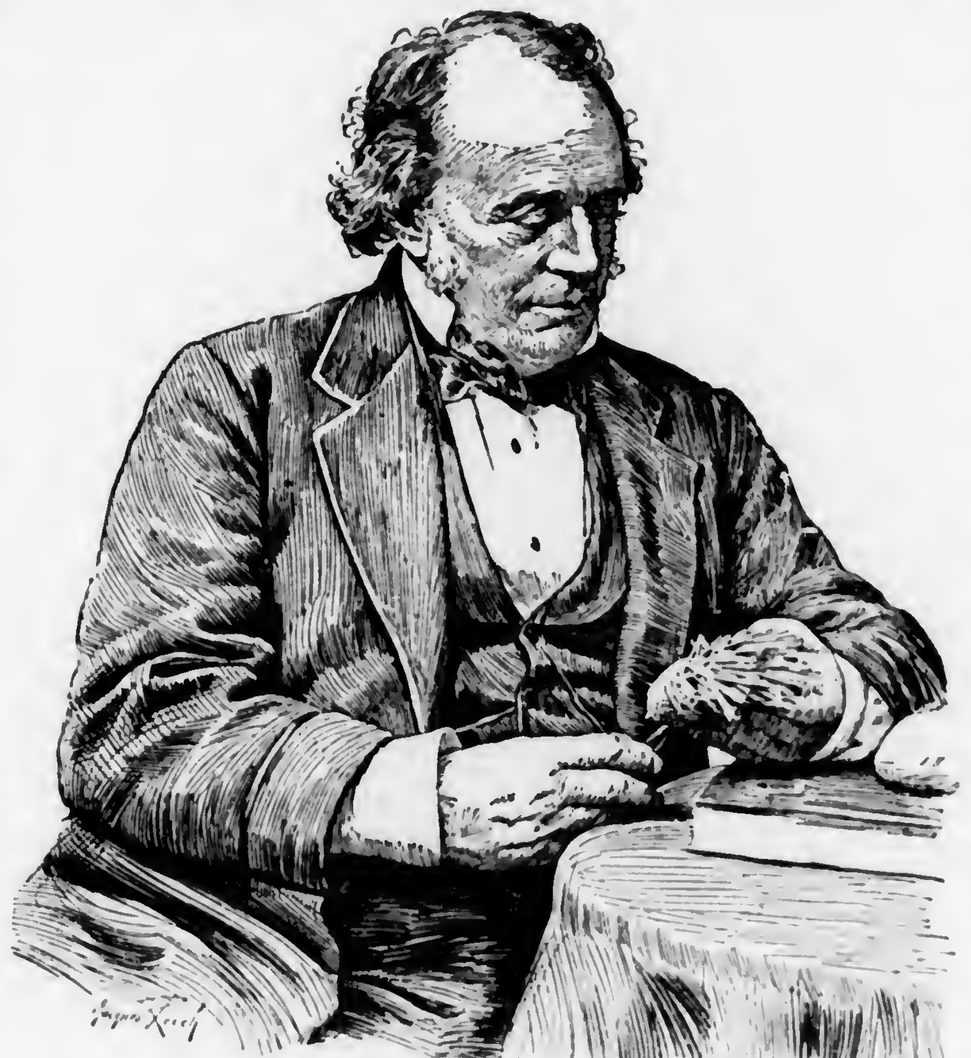
JOSEPH HARRIS.—Probably few men have done more to bring American agriculture and that department of horticulture which is, in a measure, agricultural, up to its present advanced condition than Joseph Harris. As a writer in periodicals and of agricultural books his name is well known. His death at Moreton farm, about five miles from Rochester, has recently been announced. He was one of the first to bring into great notice the famous apple, the Northern Spy. He was also one of the first to demonstrate by actual practice that an orchard was more permanently profitable by not having the surface continually torn to pieces by the plow or harrow. His practice was to keep the coarse grass and weeds down by the use of swine for pasturing. For many years he was the editor of the famous *Genesee Farmer*. His work on fertilizers has been especially popular. Mr. Charles A. Green, in his *Fruit Grower*, has recently paid a very handsome tribute to the memory of this especially useful man.

THE EMPRESS JOSEPHINE.—Some of the best botanical works of the past generation were issued under the patronage of the Empress Josephine, who was herself very fond of gardening. A recent account says of her:

Josephine's favorite employment — it was more than a diversion—was horticulture. She was not in any sense a scientist. She loved nature for nature's sake, and her hothouses and gardens were her long and lasting delight. In those days such pleasures were costly, and more than once after her divorce, complaints were made that she overdrew her rather large annuity. Napoleon was liberal himself, but the State interfered, and on one occasion he was compelled to delegate a minister to warn her of the consequences of her horticultural extravagance.

GOODALE'S WILD FLOWERS AND EATON'S FERNS OF NORTH AMERICA.—These magnificent works on American Botany, are now being again advertised. The beautifully colored plates and descriptive text render the work popular with intelligent people and should be well supported.

PROF. LOUIS AGASSIZ —There is scarcely a person interested in science but who has heard of this great man, and yet we find that his portrait is unfamiliar to a large circle of his admirers. By the courtesy of Prof. Harlan H. Ballard, of Pittsfield, Mass., who founded the Agassiz Association in 1875, two years after Prof. Agassiz's death, the accompanying portrait comes before the readers of MEEHANS' MONTHLY. It was not merely his great scientific eminence, great as it was, which endeared Prof. Agassiz to so large a circle, but also the lovable character of the man which, as in the case of Prof. Leidy, attached to him all who knew him, and which character seemed to make students of nature of every one with whom he came in contact. The writer of this well remembers when many years ago at the instance of a large educaational institution in Philadelphia the Professor gave an evening lecture, how the school teachers of Philadelphia crowded around him, and it was interesting to hear their remarks in relation to his affability. They seemed to imagine that on account of his high position in the world of science, he would have to be looked up to as if he were an object of adoration; but as one remarked to the writer, he was "simply just the same as one of ourselves." It was the surprise which accompanied the remark which seemed to show how heartfelt was the appreciation of the Professor's character—the feeling himself to be simply one of the world. It may not be out of place to say in this connection, that he was born in Montier, near Lake Neufchatel, in Switzerland, in the year 1807; and yet so early and successful in life were his studies in natural history that at the age of 20 years he was appointed by the author of the "Flora of Brazil" to work up the fishes collected on Spix's Expedition, which he did in an able work wholly in the Latin language. He visited America in 1846, and so thoroughly delighted was he with our country that he determined to make it his permanent home, and did not return. During his residence in this country very tempting offers were made to him to go back to the Old World, but nothing moved him to leave America. His death occurred on the 14th of December, 1873.



PROF. LOUIS AGASSIZ.

THE NATIONAL FLOWER. — MEEHANS' MONTHLY has taken very little interest in the discussions concerning a national flower, believing that national flowers never become national until connected with some great national event. National flowers are like the poets; they are born and not made. However, as some of our intelligent correspondents seem still interested in the question, it may be noted that Mr. T. C. Thurlow writes warmly in regard to the Columbine, especially remarking, "As this is the Columbus year." But the Columbine is scarcely an American flower in the true sense of the word, as the great home of this flower is in northern Europe. America has but a very few species to boast of, and these by no means common. There is one matter, however, connected with this flower which always had an interest for the writer. The Latin word for dove is Columba, and it is a matter of ancient history that the dove, Columba, was sent out of the Ark to find a new world. In like manner, Columbus, whose name is evidently derived from Columba, was sent out from the old world to find the new world we now enjoy—a singular and remarkable coincidence. Further the Columbine was so named from the fact that when the flowers are looked at upside down, the curved nectaries give the flower the appearance of a number of young doves, all sitting round and drinking out of one dish, and in this way the flower derived the name of Columbine. The three remarkable facts, all coinciding, form a remarkable symposium.

GENERAL NOTES.

NURSERY EXHIBITS AT CHICAGO.—A Western paper states that a small plot of ground, 50 feet by 35, in all, "three blocks," has been set apart for Mr. Pinney to exhibit varieties of coniferæ. "He is informed no other nurseryman exhibiting coniferæ has asked for more than one block," and "that it is not thought probable that they will do so."

It is but fair to some of the leading nurserymen of the United States, and probably elsewhere to say that if "applications" in form were not made, it was due to the failure of correspondence to make anything out of the management.

One firm can be named who earnestly desired to make an exhibit of over one thousand kinds of trees and shrubs—possibly the finest the world had ever seen,—but the whole subject was knocked about, from one "agent" to another "agent," who seemed to be thriving on salaries with wonderful prolificacy, but with corresponding paucity of the knowledge necessary to comprehend the wants of a nurseryman, that the whole matter had to be abandoned. Mr. Pinney is to congratulated on having been able to secure even this small space.

LOVE FOR INTELLIGENCE.—A correspondent from a large Connecticut city with some reputation as a centre of intelligence, says:—"In this splendid library of our city there is a whole alcove and more full of books on botany, but no readers or students, at best only a few. How could it be otherwise when the common people know nothing, so to say, of such priceless treasures. Money, and how to get it seems everybody's sole purpose to live for."

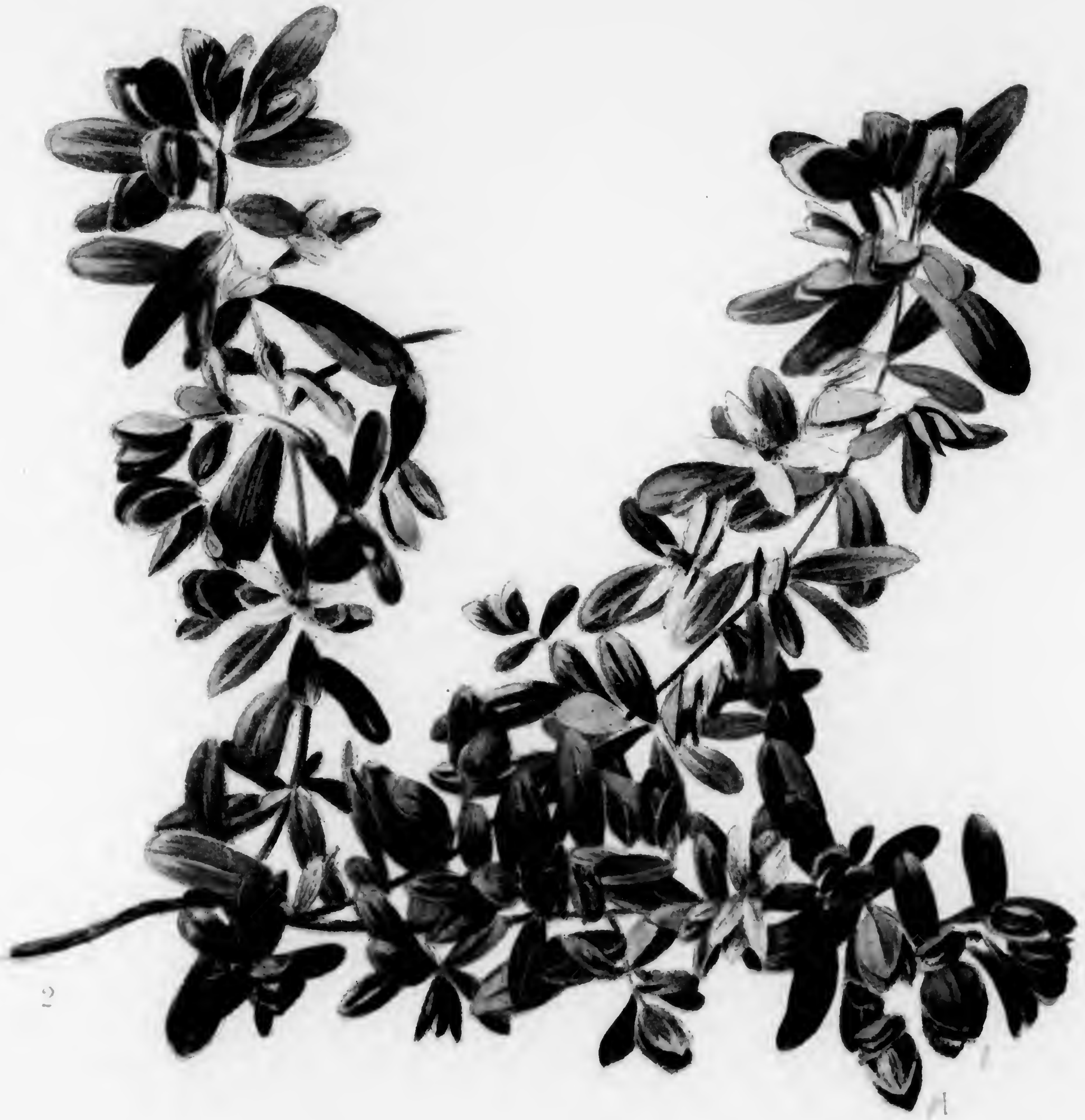
This is not merely true of botanical work but of almost all classes of books except novels and romances. And this latter remark would lead to the conclusion, that it is not mere money-making treatises that take the place of substantial reading, but rather that "culture" has run in the wrong direction. It is the mission of works like MEEHANS' MONTHLY, to improve this neglected field.

ALEXANDER MURDOCH.—Among the horticultural losses of last month must be chronicled the death of Mr. Alexander Murdoch, one of the well known nursery firm of J. R. & A. Murdoch, of Pittsburgh. He died February the 9th, in his 53rd year. His father was one of the first to engage in the nursery business in Pittsburgh, having started it in 1840. He was well known for his advanced intelligence in everything connected with plants, fruits and flowers. His son inherited, in a great measure, the peculiar horticultural gifts of his father and took an active interest in everything connected with the advancement of his profession. The Home Wood Cemetery, a very beautiful place, received a large share of his attention, he being one of the directors.

ERNST BENARY.—While going to press notice comes of the death of the eminent horticulturist Ernst Benary, of Erfurt, which occurred on the 19th of February, in his 74th year. He was one of the rare men who, starting in a humble way, determined to make horticulture a life-long pursuit, and he spared no exertion to make himself a master of the art. He commenced the seed business in 1843—and so has been nearly a half century at the head of the seed firm bearing his name.

A BOOK ON CELERY CULTURE.—Messrs. W. Atlee Burpee & Co., of Philadelphia, have issued a small paper covered treatise of eighty-five pages on the most profitable methods of cultivating celery, which is timely and useful. New methods have simplified what was once a troublesome culture, and a perusal of the treatise shows that even an experienced celery grower has much to learn.

ABIES FRAZERI.—It should have been Mr. Harlan P. Kelsey to whom credit is due for introducing the beautiful Fir, the true *Abies Frazeri* to cultivation, and not Kelsey & Co., which is not a North Carolina firm.



ASCYRUM CRUX-ANDREÆ.

ST. ANDREW'S CROSS.

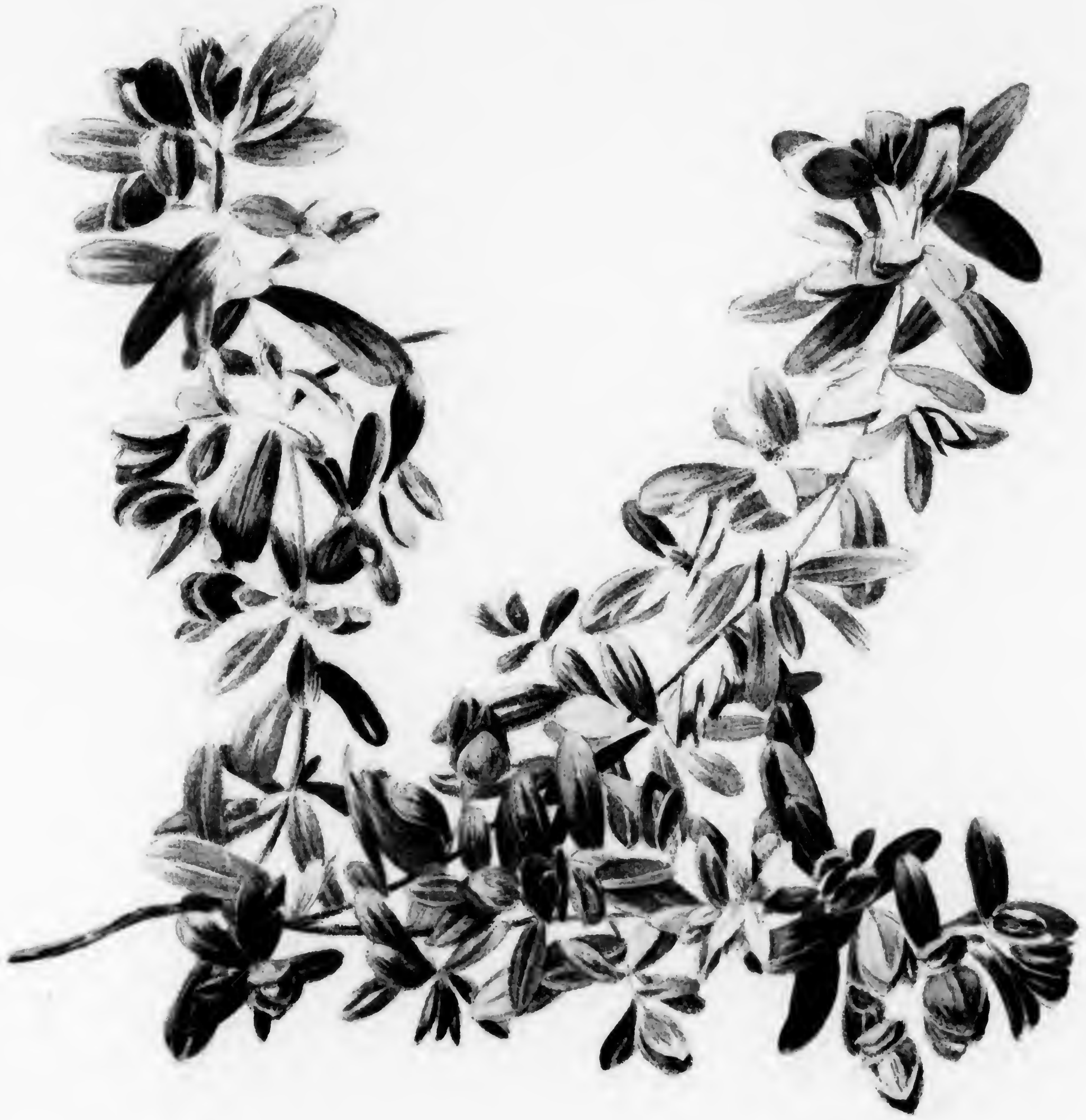
NATURAL ORDER, HYPERICACEÆ.

Ascyrum crux-andreæ, Linnæus.—Stem nine to eighteen inches high, much branched from the base Leaves obovate-oblong, narrowed at the base, half an inch to three-quarters of an inch in length, with numerous dark colored dots on both sides. Flowers yellow, in terminal few-flowered corymbs, and sub-terminal from the axils, on short peduncles; petals linear oblong; styles two. Darlington's *Flora Cestrica*. See also Gray's *Manual of the Botany of the Northern United States*. Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.

One of the most beautiful pieces of rural scenery near the great city of Philadelphia, is the valley of the Wissahickon. The great diversity of its tree-clad hills, and fern-covered rocks, with the cool shade which the rapid stream gives to the umbrageous trees, are by no means the chief of its charms. A large part of its interest lies in the great variety of its vegetal forms. Its botany is as diversified as the lovely hills themselves. Few areas of similar extent could offer more species to the collector, and there is something special to attract at any season of the year. The low evergreen plant now about to be described occurs in many places, but the writer does not remember it as producing the same effect in winter scenery anywhere else as along the Wissahickon. On the slopes of the hills among the rocks bunches over eighteen inches wide and nearly a foot high, may be seen aiding in relieving the dreariness of winter when the snow is on the ground. It is quite as green as the box-edging of our gardens, but far more beautiful, because it has none of the set stiffness which box has. Its fringy form, amid the white snow, and among the brown, rough rocks, is particularly pleasing. In summer time the soft green foliage is brightened by the pale yellow and very singular flowers. Each flower does not last long, but they are continuously produced, and some may be found open at any time from the end of June to the beginning of August. The profusion of bloom is owing to the immense number of little branches which form the bush, and which give the whole plant its pleasing winter character.

Besides these general features there are many peculiarities which render it very acceptable to those lovers of wild flowers who delight in looking at nature in detail. The little woody stems at the base of the plant are quite round, but as the summit is examined the branches are found to be two-edged. As the growth of the season ceases, or among the short and sturdy growths on the branchlets, there will be found some cases where the stems are square. An examination will show that from the edges of the leaf near the base two membraneous tissues run down to the node below. As the leaves are opposite, there are thus four lines, and which, in the last condition noted, make the stem appear four-edged or square. In the more vigorous branches, where there is the widest distance between the nodes, the two edges of the membrane connected with each leaf, meet the edges of those opposite, unite, and then we have the two-edged condition. This membrane forms only the outer cortical or bark layer, and lasts only one season; when it decays the normal round condition remains. The finding of three forms on the one plant affords a good lesson, and gives the clue to the formation of all two-edged and square-stemmed herbaceous growths. It is from the union or separation of edges which seem to run down, or be decurrent from the bases of leaves at the node above; and only among plants with opposite leaves are square stems found.

Another interesting study is furnished by the inflorescence,—the sepals, petals, and other parts of flowers might have been leaves. By the agency of some law operating at a very early stage of the organ's existence, what might have been leaves, are transformed into floral organs. In many plants the process of transformation is very gradual, in others sudden and seemingly fitful. In our plant the



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INTENTIONAL SECOND EXPOSURE

series of leaves at each node is remarkably even and regular. In many successive series, scarcely a leaf will be found larger or varying in form from another, but when the flower condition appears, instead of a gradual decrease of the size of the leaves till they become mere bracts, a pair of very minute ones are formed at once, and to the next pair is given large ovate forms very different from the regular leaves. With this fitful effort the growth force seems measurably exhausted, and the next pair of leaves are but little larger than the small leaves,—the "mere bracts" already noted. The first small set has a low vital power, and soon dies, so that the office of calyx falls to the other two series,—the pair of large ovate, and the pair of very small inner ones, forming the "four parted calyx;" after this we have a vigorous growth, apparently embracing two nodes at once, and which, therefore, results in four petals of very nearly equal size,—and in which the irregular arrangement is very remarkable; and suggested its specific name, *Crux-andreæ*—or the St. Andrew's cross.

Passing from its morphological characters to its relation with history, it may be remarked that *Ascyron* was a plant used in medicine by the ancient Greeks and Romans, and seems to have been some plant of the order *Hypericaceæ* to which our plant belongs,—perhaps the European plant now known as *Hypericum Ascyron*. According to Pliny, the *Ascyron* of that day had a "coma"—probably referring to the head of hair-like stamens—which, when bruised, turned as red as blood. The old herbalists in their endeavors at system, had a section of *Hypericum* in which those related to the supposed *Ascyron* found a place; and our plant first sent to Europe from Virginia by the Reverend John Banister, was placed therein. When systematic botany was revised by Linnæus, the old *Ascyrons* were found to be true *Hypericums*, and the American member of the family found to be a distinct genus; and it was thus left with the ancient name, though the genus of about half a dozen species is wholly an American one. Separated from its ancient family relations, it has not only borne with it a part of the name of the family, but also one of its common names, that of St. Peter's wort, by which the whole family of *Ascyrons* is sometimes known in American works. *Hypericum perforatum* was the original St. John's wort. In old times it was believed that if the herb was gathered on the eve of St. John's day, it was blessed by that saint to this extent, that if hung in a window during a thunder storm, the occupant of the room was perfectly safe. The *Hypericum Ascyrum* was believed to be under the patronage of St. Peter, and St, Peter's wort has evidently been transferred to our plant with the transfer of the name. Plukenet, an early English author, writing soon after its introduction, adopts the name suggested by the American botanist Banister, and writes of it as St. Andrew's wort. It would be as well to let the name of St. Peter's wort drop,—especially as there is already a St. Peter's wort in the samphire of Shakespeare, botanically *Crithmum maritimum*,—and there happens to be no plant offered to St. Andrew in the Monkish calendar. Our St. Andrew's wort, has made for itself no name in poetical literature, nor become related to any art other than that of gardening. It may, however, have some use in the art of healing according to a suggestion thrown out by Dr. Francis Peyre Porcher in his "Resources of Southern Fields and Forests." He says that an infusion of the bruised root and branches of *Ascyrum crux-andreæ* was used with success by an Indian in the case under his observation, of a female with an ulcerated breast which had resisted all other attempts at relief; and he speaks of having since used the plant with success in similar cases. It is interesting to note in connection with this observation, that Pliny, the ancient Roman writer, records much the same properties of the *Ascyron* of that time, and which plant as we have already noted, is in all probability closely related to our St. Andrew's wort.

The geographical range of the plant is confined to the States east of the Mississippi. It does not exist except in limited locations north of New Jersey, though one of these limited locations is so far north as Nantucket. It varies somewhat in different locations, and these variations have produced several synonyms, but which are now rarely used.

EXPLANATION OF THE PLATE.—1. Foliacious segment of the calyx in unopened flowers. 2. Small branch from a thick dense plant from the Wissahickon.

WILD FLOWERS AND NATURE.

MAY DAY.

"The veil-like verdure of the early spring
Thickened and deepened to the green of May,
The lady's-slipper, in the hidden dell,
Once more her frail and rosy bubble hung,
And lace-like vines the summer decks with bells,
Mantled the towering rocks moss-stained and gray,
While from the clefts the scarlet columbine
Her golden-lined horns hung lower still
Heavy with black wild bees that murmuring
Were gathering honey there the livelong day."

HOWARD WORCESTER GILBERT.

VARIATION OF THE HORSE-RADISH LEAVES.—Mrs. W. A. Kellerman contributes the following admirably suggestive paper:

Late in autumn, once, I noted that the Horse-radish leaves had undergone a curious transformation. The familiar leaves (Fig. 1), p. 77, with broad blade and crenate margin (Fig. 1), had disappeared, or had become notched, lobed and cut (Figs. 5, 6), until they seemed but skeletons.

Upon referring to "Gray's Manual" I find in his description of the leaves, "rarely, cut-pinnatifid."

Observation has satisfied me, that the leaves are not "rarely, cut-pinnatifid," but pass through an annual cycle of variation, in which the "cut-pinnatifid" form is as constant as the broad crenate leaf. The cut leaves begin to make their appearance about the middle of August. From this time on, there is a gradual transition from the ordinary leaf to the pinnatifid form. The first stages have but the apex cut (Figs. 2, 3), the remainder of the leaf retaining the shape common to the typical leaf. The divisions continue to extend towards the base of the leaf until the entire leaf is superseded by the cut-pinnatifid form. The broad crenate leaves are killed by the hard frosts in the fall, while the small, almost "dissected" leaves (Fig. 9), which fill the crown at this time remain green throughout the winter, although growth ceases when cold weather sets in. These finely divided leaves are necessarily the first to appear in the early spring, since they are but a continuation of the fall growth. As the season advances they pass back through transition forms to the ordinary crenate leaf. These are the simple facts in the case, and as Mr. Squeers says, "facts, sir, are what we want."

During the carboniferous era, it is said, plant life cleared the poison from the murky air and thus prepared the way for animal life.

Presumably, plants behave now as they did in those early times, consume carbon dioxide and liberate oxygen. Is it mere speculation, therefore, to claim that there is an appreciable difference between the air of the springtime and that of the fall? That the difference between the conditions for vegetable growth during the coal age, and the present time, is, in a measure, comparable with the difference in the conditions for the growth of vegetation, between our spring and fall?

From this standpoint, the "cut-pinnatifid" leaves of the Horse-radish (and of many other plants appearing late in the fall), become intelligible. The rationale of their transformation becomes apparent. They must adapt themselves to their environment or drop out altogether. As the struggle for existence is rendered more severe, both on account of the increase of neighboring competitors, and because of the decreased amount of carbon dioxide in the air, the leaves must adjust themselves to these changed conditions, hence they become notched, lobed, cut, to better facilitate the more thorough sifting of the atmosphere; to better admit the sunlight, Nature's magic wand, to all parts of the foilage.

The large crenate leaves, like the old ladies who "went early to get the first run o' the tea," come early in the spring, sit at the first table, as it were, and dine right royally. As the season advances, over-population and a diminished food supply serve to bring about the curious variation of its foilage.

MIGRATION OF BIRDS.—How do robins, and other migratory birds, find their way to and from their Summer homes?

LEANING SEA-SIDE TREES.—Observers by the sea-shore all note that trees by the sea-coast lean either by their trunks or branches landward, and away from the ocean lines. In a pretty poem by Mary Darmesteter called "The death of Prester John," recently published in the New York *Independent*, this sea-side peculiarity is thus referred to:

> "Then up and spake the eldest Seer (and he was white as rime,
> Bent as a sea-blown apple-stem, solemn as night at sea.)"

The authoress, evidently, nor possibly any one ever gave a thought to the real cause of the leaning, for they are not really "blown" in the direction noted. The early branches while still young and tender have their points killed on the sea-exposed side by the cold sea breezes of early spring. These would not suffer by later summer breezes. The secondary shoots thus get through uninjured. But those on the leeward side do not suffer, and hence these have the double chance to extend, and thus eventually give a "lopsided" appearance to the tree's growth, and which in time present the appearance of having had the branches "wind-blown" toward the land.

THE HOME OF THE SUGAR-CANE.—It is often a subject of comment that mankind know the least about things with which they are in some respects the most familiar. This is certainly true of sugar and the sugar-cane. Though for so many centuries sugar has been in common use, few could tell his neighbor where it came from and where was the sugar plant's original home. The sugar-cane is a species of grass and not distantly related to our Indian corn and, like the Indian corn, is not now found wild in any part of the world. Wherever it originally grew, it must have been destroyed by the advance of civilization. It is said that a Chinese literary compilation, which was put together in the third century, states that the Province of Bengal sent sugar-cane as a tribute to China; but it is not known that the solid sugar itself was extracted from the cane. The first indication of the solid sugar has been located between the third and the sixth century in India; while the Chinese do not appear to have been acquainted with the method of extracting the sugar from the cane until about the year 640. Cane-sugar was first introduced into Europe by the Saracens in 827,—from thence it extended into Spain. From some snatches of history it would appear that it found its way into Germany first from Venice. Just when it was introduced into America does not seem clear. On his second voyage plants were taken by Columbus; but it does not appear to have finally established itself from this early introduction. The first sugar refinery known was established in 1573, at Augsburg, in Saxony. The largest refinery was in 1597 at Dresden. These facts are gathered from the Louisiana *Planter*.

SCHINUS MOLLE.—"Referring to your notes on *Schinus Molle*, page 26, and Vegetable Curiosities, page 27," says Mr. Wm. Saunders, of the United States Department of Agriculture, "attention might be called to the action of the leaves of the Schinus when placed in water. These, after lying a short time on the surface will begin to start and jump as if they were alive, while at the same instant of start a jet of oily matter is discharged, acting as a propeller. Lindley states it thus: 'The leaves expel their resin with such violence when immersed in water as to have the appearance of spontaneous motion, in consequence of the recoil.'

So far as I know, this peculiarity of motion in leaves is confined to another plant of the same family as the Schinus, called *Duvaua latifolia*, a South American plant also."

The American species of Rhus possess, in a more or less degree, the same peculiarities.

GREEN LEAVES IN THE DARK.—A correspondent from Charleston, S. C., suggests, in reference to the young green-leaved orange plants occasionally found in fruits, that the pulp and rind become so thin as to be semi-transparent, and that there is sufficient light in such cases to produce the green of the leaf. This is a matter for actual observation. Those living in the vicinity where these green-leaved seedlings inside the fruit occur, could perhaps test it. In the absence of this actual experience, one would hardly suppose there would be sufficient light, for, in taking the thin rind of some oranges and placing it against brilliant gas jets, no appearance of transparency is evident.

THE AMERICAN PLANE TREE.—The interest in the King of the Eastern American forest is unabated, and a number of correspondents send valuable contributions to its history.

Mr. Robert Ridgway, of the Smithsonian Institute sends in the following, and notes of other famous trees will follow:

"In the February number of your excellent and always welcome magazine you ask for information respecting large American plane trees. Having paid much attention to the study of our forest trees and taking many measurements, I am glad to be able to contribute something which may be of interest.

Fourteen trees of this species (*Platanus occidentalis*) standing within one square mile of forest in Gibson County, Indiana, were, in 1875, measured by me with the following result: Girth, average, well above swell of roots, 23½ feet; the extremes, 14 and 30 feet, respectively. Spread of top, average, 127 feet, the extremes being 100 and 135 feet.

Altogether, I have measured the circumference of 27 trees; the average girth of these, above the "swell," was 23.22 feet, the smallest being nine feet and the largest 33.50. The average would have been considerably greater had not several comparatively small trees been measured on account of their long, clean trunks; for example, the tree girting nine feet measured 83½ feet to the first limb. As may be well known, few trees vary more in the character of their trunk than the present species. Usually, the trunk divides at a comparatively low elevation, often very near the ground. It is not uncommon, however, in the heavy forests of the western bottom-lands to find shafts of the "sycamore" which are as straight and mast-like as the trunk of any pine or spruce. The longest trunk measurements which I have been able to make (always from felled trees) are as follows: (a) length, 83½ feet, circumference, nine feet; (b) length, 74 feet, circumference, 18 feet; (c) length, 68 feet, circumference, 25 feet; (d) length, 50 feet, circumference, 27 feet; (e) length, 60 feet, circumference, 30 feet.

The total length has been measured by me of only eight trees, all but one of which had been felled and were measured with a 100-foot tapeline. The average length of these eight trees was 145¼ feet, the longest being 168 feet and the shortest 129 feet.

A LARGE AMERICAN PLANE TREE.

Perhaps, the largest tree of this species hitherto recorded is mentioned in Case's *Botanical Index*, for April, 1880, p. 44. It stood near Worthington, Greene County, Indiana, in the White River bottom. It was 48 feet in circumference, and had a solid trunk which at 25 feet from the ground divided into three or four main branches, the largest of which was more than five feet in diameter.

I send you with this a photograph of a tree which, in November, 1875, when the view was taken, measured 42 feet in circumference at the ground and 30 feet round the smallest part of the trunk. It was about 160 feet high (as determined by triangulation and measurements with a "dendrometer"), the massive crown spreading 112 by 134 feet, and elevated 70 or 80 feet above the ground. This tree stood on the Indiana side of the Wabash River, near Mt. Carmel, Illinois, and was still standing in 1890, though a wreck through attempts to burn it down as a cumberer of the ground.

In conclusion, I would say that while these gigantic plane trees were by no means rare twenty years ago, few of them, comparatively, have survived the demands for lumber and the requirements of the farmer. Thousands of

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> Bent as a sea-blown apple-stem, solemn as night at sea.)"

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The Home of the Sugar-Cane.—It is often a subject of comment that mankind know the least about things with which they are in some respects the most familiar. This is certainly true of sugar and the sugar-cane. Though for so many centuries sugar has been in common use, few could tell his neighbor where it came from and where was the sugar plant's original home. The sugar-cane is a species of grass and not distantly related to our Indian corn and, like the Indian corn, is not now found wild in any part of the world. Wherever it originally grew, it must have been destroyed by the advance of civilization. It is said that a Chinese literary compilation, which was put together in the third century, states that the Province of Bengal sent sugar-cane as a tribute to China; but it is not known that the solid sugar itself was extracted from the cane. The first indication of the solid sugar has been located between the third and the sixth century in India; while the Chinese do not appear to have been acquainted with the method of extracting the sugar from the cane until about the year 640. Cane-sugar was first introduced into Europe by the Saracens in 827,—from thence it extended into Spain. From some snatches of history it would appear that it found its way into Germany first from Venice. Just when it was introduced into America does not seem clear. On his second voyage plants were taken by Columbus; but it does not appear to have finally established itself from this early introduction. The first sugar refinery known was established in 1573, at Augsburg, in Saxony. The largest refinery was in 1597 at Dresden. These facts are gathered from the Louisiana *Planter*.

Schinus Molle.—"Referring to your notes on *Schinus Molle*, page 26, and Vegetable Curiosities, page 27," says Mr. Wm. Saunders, of the United States Department of Agriculture, "attention might be called to the action of the leaves of the Schinus when placed in water. These, after lying a short time on the surface will begin to start and jump as if they were alive, while at the same instant of start a jet of oily matter is discharged, acting as a propeller. Lindley states it thus: 'The leaves expel their resin with such violence when immersed in water as to have the appearance of spontaneous motion, in consequence of the recoil.'

So far as I know, this peculiarity of motion in leaves is confined to another plant of the same family as the Schinus, called *Duvaua latifolia*, a South American plant also."

The American species of Rhus possess, in a more or less degree, the same peculiarities.

Green Leaves in the Dark.—A correspondent from Charleston, S. C., suggests, in reference to the young green-leaved orange plants occasionally found in fruits, that the pulp and rind become so thin as to be semi-transparent, and that there is sufficient light in such cases to produce the green of the leaf. This is a matter for actual observation. Those living in the vicinity where these green-leaved seedlings inside the fruit occur, could perhaps test it. In the absence of this actual experience, one would hardly suppose there would be sufficient light, for, in taking the thin rind of some oranges and placing it against brilliant gas jets, no appearance of transparency is evident.

INTENTIONAL SECOND EXPOSURE

The American Plane Tree.—The interest in the King of the Eastern American forest is unabated, and a number of correspondents send valuable contributions to its history.

Mr. Robert Ridgway, of the Smithsonian Institute sends in the following, and notes of other famous trees will follow:

"In the February number of your excellent and always welcome magazine you ask for information respecting large American plane trees. Having paid much attention to the study of our forest trees and taking many measurements, I am glad to be able to contribute something which may be of interest.

Fourteen trees of this species (*Platanus occidentalis*) standing within one square mile of forest in Gibson County, Indiana, were, in 1875, measured by me with the following result: Girth, average, well above swell of roots, 23½ feet; the extremes, 14 and 30 feet, respectively. Spread of top, average, 127 feet, the extremes being 100 and 135 feet.

A LARGE AMERICAN PLANE TREE.

Altogether, I have measured the circumference of 27 trees; the average girth of these, above the "swell," was 23.22 feet, the smallest being nine feet and the largest 33.50. The average would have been considerably greater had not several comparatively small trees been measured on account of their long, clean trunks; for example, the tree girting nine feet measured 83½ feet to the first limb. As may be well known, few trees vary more in the character of their trunk than the present species. Usually, the trunk divides at a comparatively low elevation, often very near the ground. It is not uncommon, however, in the heavy forests of the western bottom-lands to find shafts of the "sycamore" which are as straight and mast-like as the trunk of any pine or spruce. The longest trunk measurements which I have been able to make (always from felled trees) are as follows: (a) length, 83½ feet, circumference, nine feet; (b) length, 74 feet, circumference, 18 feet; (c) length, 68 feet, circumference, 25 feet; (d) length, 50 feet, circumference, 27 feet; (e) length, 60 feet, circumference, 30 feet.

The total length has been measured by me of only eight trees, all but one of which had been felled and were measured with a 100-foot tapeline. The average length of these eight trees was 145¼ feet, the longest being 168 feet and the shortest 129 feet.

Perhaps, the largest tree of this species hitherto recorded is mentioned in Case's *Botanical Index*, for April, 1880, p. 44. It stood near Worthington, Greene County, Indiana, in the White River bottom. It was 48 feet in circumference, and had a solid trunk which at 25 feet from the ground divided into three or four main branches, the largest of which was more than five feet in diameter.

I send you with this a photograph of a tree which, in November, 1875, when the view was taken, measured 42 feet in circumference at the ground and 30 feet round the smallest part of the trunk. It was about 160 feet high (as determined by triangulation and measurements with a "dendrometer"), the massive crown spreading 112 by 134 feet, and elevated 70 or 80 feet above the ground. This tree stood on the Indiana side of the Wabash River, near Mt. Carmel, Illinois, and was still standing in 1890, though a wreck through attempts to burn it down as a cumberer of the ground.

In conclusion, I would say that while these gigantic plane trees were by no means rare twenty years ago, few of them, comparatively, have survived the demands for lumber and the requirements of the farmer. Thousands of magnificent trees of this species have been killed by "girdling" and afterward burnt, simply to get them out of the way. More recently, the wood of the "sycamore" has been used in enormous quantities for the manufacture of tobacco boxes, the extent of this demand being indicated by the fact that, in 1890, the St. Louis Box Company purchased from land-owners along the Embarras River, in Jaspar County, Illinois, 3,750,000 feet of sycamore lumber; and I was informed, during a visit to that locality in the summer of that year, that a single mill had a contract for sawing 11,000,000 feet."

THE RANGE OF KALMIA LATIFOLIA.—Mr. Harlan P. Kelsey, of Highlands Nursery, N. C., finds the Kalmia further south than generally supposed.

"While on a hurried business trip to the progressive and rapidly-growing little town of Florence, S. C., I had the opportunity of enjoying a most charming boat ride on a large artificial lake or pond, through the courtesy of Mr. A. A. Cohen, the proprietor and one of the most prominent business men of this 'New South' town.

"As I was drinking in the truly delightful and tropical scene of a 'Cypress Lake'—winding our way among the peculiar-enlarged bases of the smooth straight-trunked trees of the 'Bald-Cypress' (*Taxodium distichum*), whose limbs were draped with tons of the beautiful 'Southern Grey Moss' hanging in long festoons even to the surface of the water, I was greatly surprised and delighted to espy a hillside which formed the rather abrupt south bank of the lake, completely covered with a jungle of our lovely evergreen Mountain Laurel, or *Kalmia latifolia*; and I afterward learned that it grew elsewhere in the immediate neighborhood.

"Noting the fact that Florence is only 80 miles from the Atlantic, and but a few hundred feet elevation, and further, only a little over a hundred miles from the truly southern and almost semi-tropical city of Charleston, it makes the discovery particularly interesting, proving as it does in what varied soils and among what widely different environments our ericaceous evergreens will thrive, and encouraging our southern gardeners to plant these beautiful broad-leaved Kalmias and Rhododendrons where they never dreamed before of being able to have the luxury of this class of handsomely foliaged and gorgeously flowered shrubs.

"I shall be glad if any of the readers of MEEHAN'S MONTHLY can apprise us of a more southerly station for *Kalmia latifolia* than the one here noted."

THE CAROLINA JASMINE.—Miss Maria Pinckney, sends from Charleston specimens of *Gelsemium nitidum*, with remarkably large and pale yellow flowers. The leaves are also long and narrow. The plant is very different from the one the conductors are familar with, which has flowers scarcely half the size of these, and of a deep orange color; with the leaves broadly ovate.

When the differences were first brought out by correspondence it was suspected there were dimorphic forms, which, as the conductors have since noted, Prof. Pond long ago observed to exist in this plant.

In these specimens from Miss Pinckney, the stamens and pistils are both of equal length, and absolutely perfect. This is probably a distinct species, hitherto overlooked by botanists.

AN EDIBLE THISTLE.—In the search for improved vegetables, the Rocky Mountain Thistle should not be forgotten. It rolls up its young leaves after the fashion of a cabbage lettuce, and was food for Indians who, as Dr. Coues has determined, called it Shanataque. The writer of this paragraph has collected them in Colorado as large as small cabbages. They ought to be as good as an artichoke, which is the flower head of an ally of the thistle. Dr. Gray named it *Cnicus edulis*. A few seeds would be acceptable for experiment.

COWSLIP.—This in the Old World, is a well known form of the Primrose. In the Eastern States the name is applied to *Caltha palustris*, which, in the Old World, on the other hand, is called Marsh Marigold. The confusion in the common names is very misleading. Inquiries often come as to whether the Cowslip of New England is the real Cowslip of the poets, which, as will be seen by this paragraph, it is not.

GENERAL GARDENING.

SONG OF THE FLOWERS.

"We are the sweet flowers,
Born of sunny showers,
(Think, when'er you see us what our beauty saith;)
Utterance, mute and bright,
Of some unknown delight,
We fill the air with pleasure, by our simple breath:
All who see us love us—
We befit our places;
Unto sorrow we give smiles, and unto graces, races."
—LEIGH HUNT.

PRUNING TREES.—Many trees suffer from excessive pruning; while as many probably fail to meet the results anticipated by cultivators, through a want of pruning. No one can be taught how to prune properly, unless the object to be attained by such pruning is clearly kept in view. The student of this branch of practical horticulture, coming into Philadelphia by the Pa. R. R. may see an admirable lesson in this line from the large forest trees in the vicinity of the Zoological Gardens. These have evidently suffered at some time or another from starvation. In natural woods, trees receive a great deal of food from the decay of fallen leaves which accumulate beneath them; this collects sand and other mineral matters, and forms an excellent opportunity of giving food to the roots. When the surface is kept clear, as it ought to be kept clear for popular enjoyment, the trees have no opportunity of getting the nutrition necessary to sustain vigorous hold on life. When a dry season comes of extra severity, or an extra severe winter is experienced, the vital power being low, large branches get weak, or in many cases, nearly die. In the illustration we have above referred to, these trees simply had their heads cut off. The trees were, in common language, pollarded; but the branches shot out with little more vigor than before, because the real trouble was not this excess of branches, but the deficiency of food. As a consequence, the stumps are rotting away at the centre, and it will not be many years before these fine specimens of the ancient forests of Pennsylvania will disappear. If a large amount of surface manuring had been applied instead of heading off the trees, it would have been a life-saving, instead of a life-destroying operation.

It will be seen then, that the object for which we prune must be first considered before pruning is resorted to.

In connection with orchard trees, the same thoughtfulness before commencing to prune is required. It is essential that a tree should have a large amount of healthy foliage rather than the same quantity of half starved leaves. Branches in the interior of the tree, bearing only half shaded or weak leaves, are of little use. If these are taken out, the vital energies are directed into the healthier branches, which are made still more healthy, and great good results. But it may be that the trees have been allowed to overbear and the larger branches have had their life-principle somewhat exhausted. In such a case, instead of pruning out the younger branches in the interior, it is better to cut away the larger and somewhat exhausted ones and leave a younger race of shoots to take their place. These illustrations are given to show that the whole question of whether pruning is or is not an advantage, is wholly dependent on the object which it is attempted to gain, and this can only be answered by the facts in each individual case.

CORYDALIS NOBILIS.—Mr. E. Canning says, "Just a word in favor of this beautiful, yet but little known plant, (or to me, it seems little known, as I so seldom meet with it outside my own garden). It belongs to the natural order *Fumariaceæ*, and is among the earliest of spring flowering plants. Its bright spikes of pale yellow flowers, tipped with green, standing above a tuft of fern-like foilage. It is perfectly hardy, and requires little attention, growing in almost any situation. It is well adapted for a border plant as its height when in flower is only about nine inches. Being bulbous-rooted it may be increased by offsets."

FEEDING ROOTS OF TREES.—It must not be forgotten in all lessons in practical fruit culture, that there are two classes of roots to trees ; one are permanent and are truly roots, the others endure only one year, and are called fibres. When therefore, the term fibrous roots is used, it is calculated to mislead. There may be dozens of fine threads which are intended to make permanent roots, and which appear like fibres, but are not truly fibres in the sense already intimated. True fibres are annual, and are the feeders. They collect the food which goes to the nourishment of the main roots and branches, just as the leaves of a tree prepare the food which goes to the permanent shoots and branches. As in the case of the leaves, these usually die after a short period—usually a year. As the food of the tree has to be near the surface, in order to be prepared properly by oxygen from the atmosphere, it is essential that these fibres should be near the surface, and for this reason it is not always wise to cultivate, as continual stirring of the surface is called, during the season. When these fibres are in actual rest in an orchard, there is no harm whatever resulting from a plowing or harrowing of the ground in early spring ; but the repeated use of the harrow during the summer, thus disturbing these feeding fibres, is a positive injury.

It is for the reason given that trees suffer from deep planting. The real roots do not care how deep they go. Sometimes these have been traced as much as 15 or 20 feet below the surface. Deep planting does not injure these roots, but by preventing the access of the fibres which feed the plant, to the atmospheric air, injury follows. It is from the injury to the fibres or feeding roots, that trees should not be set too deep.

TESTING THE FERTILITY OF LAND.—According to a writer of many years ago, a person in buying a piece of ground for horticultural uses, dissolved a handful of earth from the land in question, in water. After leaving it settle for several hours, if the water was tasteless the land was considered fit for use.

Possibly these old fashioned people only knew that some good came from this test, and they may have been laughed at as a set of agricultural "cranks." Since moderns have discovered that the fertility of a soil depends on its power to absorb and retain nutritive matter, the old-time practice is seen to have been a sensible one. The purity of water showed that the land had properly absorbed the fertilizing material in the water.

A blind man was once laughed at for going to select a farm. On being helped out of the vehicle, he asked that the horse might be lead to a bunch of thistles. He was told there were none. Then he remarked that docks would do as well. This request they were able to gratify. He subsequently bought the farm. When asked the reason for his "cranky" desires, he replied that thistles grew on poor land, docks only on rich soil.

Some versifyer says :

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DESTROYING INSECTS IN PLANT HOUSES.—Mr. P. J. Berckmans, the eminent horticulturist of Augusta, Georgia, notes that few greenhouses may be said to be free from either of the following insects, viz : Green Fly or Aphis, Thrip, Red Spider and Mealy Bug. Whenever plants are infected with either of the above, immediate measures for their destruction must be resorted to. For Green Fly use tobacco, either in the form of snuff or in a weak solution, or by burning tobacco stems to create a dense smoke. For Mealy Bug and Red Spider use Persian Insect Powder, Cole's Insect Destroyer, or a strong solution of Whale Oil Soap, in addition to the tobacco smoke. These ingredients may be obtained from leading druggists.

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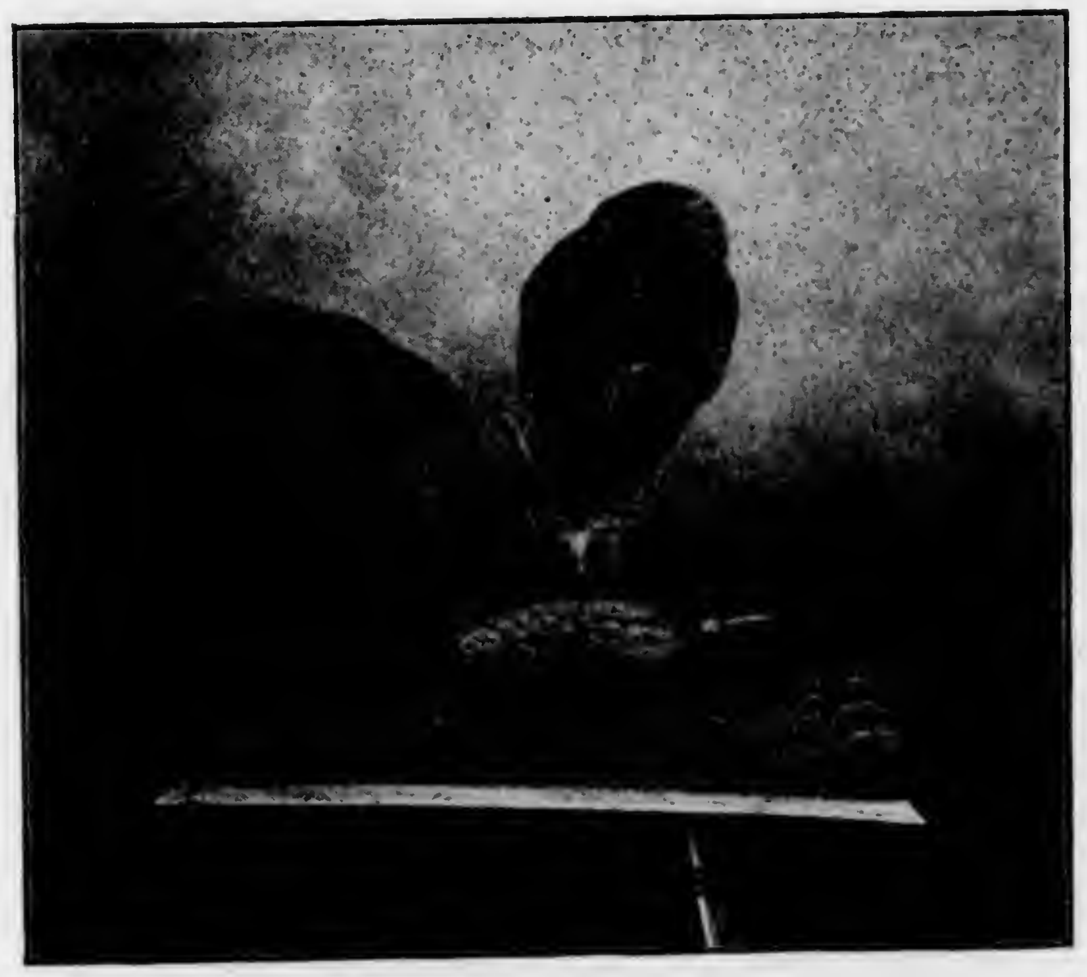

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ALMONDS.—It is not generally known by cultivators, though people well informed in historical matters understand it, that the peach and the almond are both originally of the same stock. It is indeed believed that the peach sprang from the almond. The peach is little more than an almond, with a succulent, fleshy coating to the seed, the almond having a dryer shell, which cracks and falls away, much as the shell of a Horse Chestnut would do. There are some almonds with stones like peaches — the softer shelled ones being different from the other in no other respect except in that character, — leaves and flowers, and all the parts of the plant are precisely the same. In almond growing countries the shells of the fruit on some trees do not open well, and the profit of the crop depends in a great measure on this point. When the fruit is ripe it is knocked off the trees with poles, and if in the splendid condition which the almond grower delights in, a very little raking or working will get the almond to fall easily out of the shell. Many, however, will not open easily—in this case, they have to be selected and thrown into heaps by themselves. It would not pay, however, to grow almonds largely if there were many shells which refused easily to open. The almond finds itself at home in California. It has become a staple there, and one of the most profitable.

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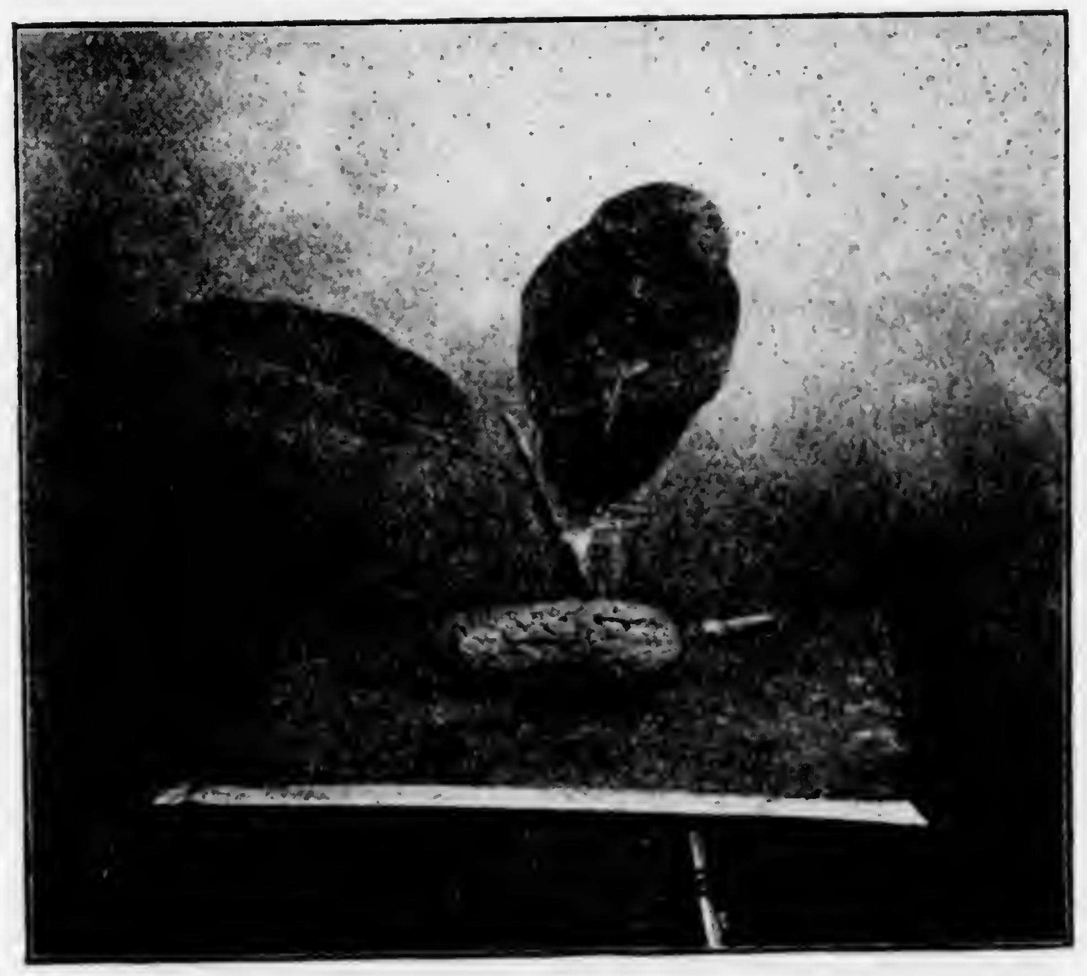
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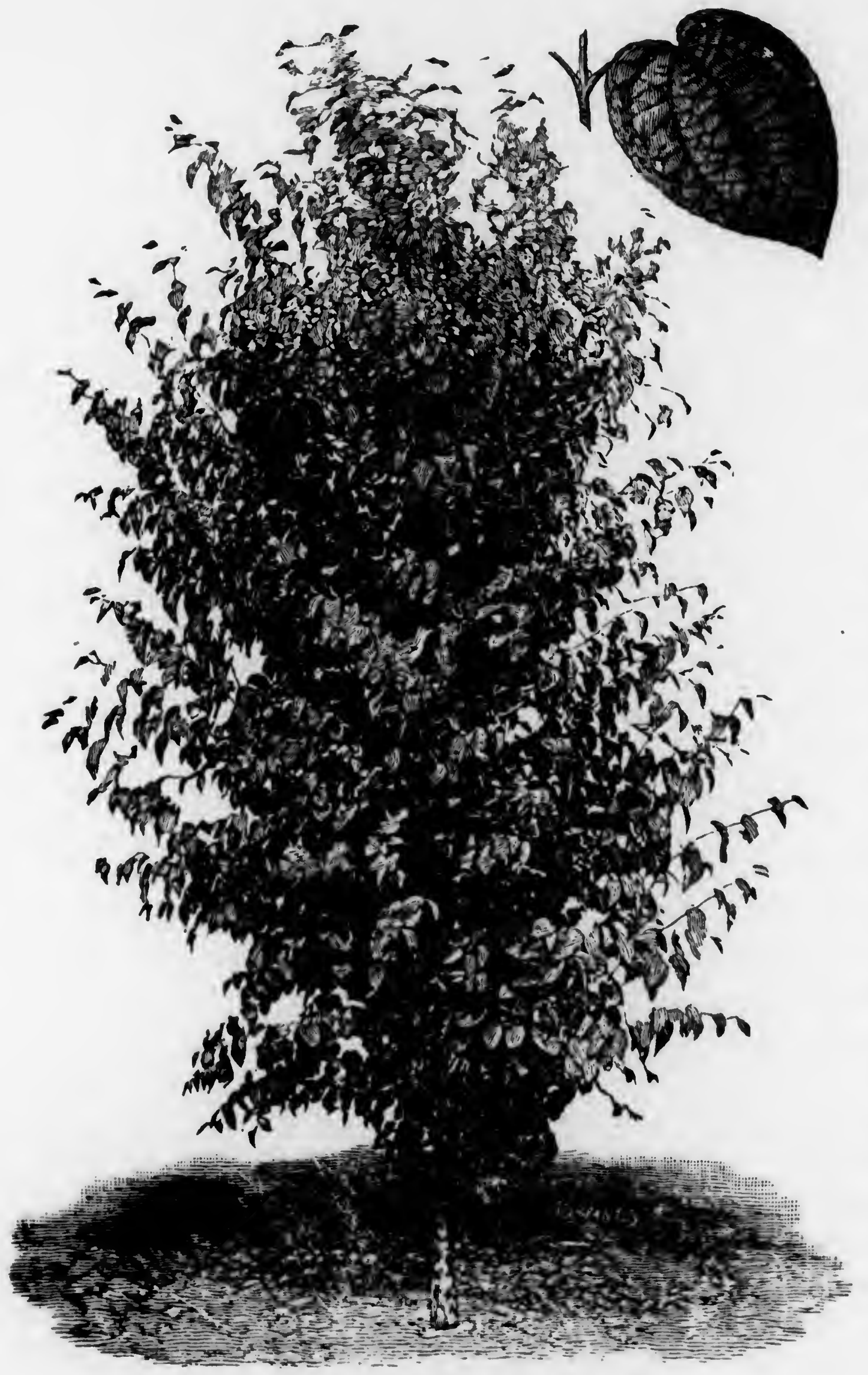
Cercidiphyllum Japonicum.—Prof. Sargent in a recent "Garden and Forest," states this to be a leading forest tree of Japan, often reaching a hundred feet, and a circumference of twenty or twenty-four. Like most forest trees all over the world, the flowers are insignificant, and the sexes are on separate trees. The finest specimen at the Meehan nurseries, Germantown, is 18 feet high, and 15 inches in circumference at the base. The habit is that of the Lombardy poplar, as shown in the annexed illustration, and this manner of growth will make it valuable where landscape gardening of an artificial type will be in character. The plant above referred to is from seed distributed some years ago, by Prof. Clark, of Amherst College.



CERCIDIPHYLLUM JAPONICUM.

Good Roads.—Mr. Wm. H. Rhawn, a public spirited Philadelphian, who has done much to attract attention to road reform, kindly sends the proceedings of the National League for Good Roads, held in Chicago in October last. Some great good must surely come from these disinterested noble efforts. The numerous illustrations, showing miserable roads in America, and grand roads in the Old World, are all very well as object lessons, but before we slight America we must not lose sight of the financial problem.

To make these good roads and similar great works in the Old World, the population is so ground down by taxation, that the lower classes have to flock in thousands to the New World, and cheerfully accept the bad roads in exchange.

The great Roman Appian Way of which we hear so much, was probably made by the unpaid labor of the captives taken in war.

There is possibly not an American who drives a horse but fully understands the good economy of a good road over a bad one. The great problem is how to get them without excessive or unfair taxation.

Hot Water to Destroy Insects.—In the early numbers of the "*Gardeners' Monthly*," over a quarter of a century ago, it was shown that pot plants infested with red spider, mealy bug, green aphis, or other insects could be readily ridden of them by inverting the pot and dipping the plant hastily in water heated to 125 or 130 degrees. The instantaneous dipping does not hurt the plant; while certain death to the insects. Recently this method of destroying insects by hot water has been tried with outdoor plants, and especially with the rose beetle; but the attempts to use this plan effectively in this way have failed, on account of the rapid cooling of the water. It is said that where heated to 200 degrees and thrown over plants by a whisk-broom, it gets so cooled as to be no benefit in destroying insects. Where plants, however, can be dipped, as before stated, it is one of the very best remedies in the hands of the window plant grower.

Ampelopsis Veitchii.—*Ampelopsis Veitchii*, or as it is more properly *A. tricuspidata*, is one of the hardiest of plants, and would probably endure a winter at the North Pole. It is however subject to a disease similar to that which afflicts the Clematis and the Pear—in the latter case known as "Fire blight." In these cases something, the exact nature of which has not been clearly demonstrated, girdles a branch for an inch or two, destroying bark both and wood, when all that is above the injured spot dies. Whatever it is that makes the attack, it evidently commences the injury before we can see the fatal effect, as the branch which is to die has leaves of a paler tint than those which are on the other branches; sometimes indeed taking in somewhat of the rosy tint of the autumn leaf. The disease does not effect the part of the plant below the point of attack. Hence though the whole side of a large wall may be killed, the plant will soon recover the lost ground. A plant even badly hurt, may never again be attacked, though sometimes the same plant continually suffers. Those unaware of these facts consider the plant "tender in some localities."

Forestry Advancement.—The writer of this paragraph, having some public business at Harrisburg, was pleased to see Prof. J. T. Rothrock, from the Speaker's desk in the hall of the House of Representatives, addressing the members of the Legislature on the subject of forestry. A very large number of the Legislators were present listening to the Professor's entertaining address. In other States, as well as Pennsylvania, public interest is being centred on this question. A Forestry association has just been established in the State of Wisconsin—a State which is above all interested in the preservation and extension of its forests.

Growth of the White Pine.—Mr. Edmund Hersey, Superintendent of the Bussey Farm, Mass., shows that it does not take so long to raise timber trees as many persons believe. Four White Pine trees set out 31 years ago, measure three feet from the ground 160 inches in circumference, 165 inches and 266 inches. These were year old seedlings when set out, He thinks that 160 to 170 trees to the acre is the best number for successful forest planting.

FRUITS AND VEGETABLES.

Seedless Fruit.—Recently "Meehans' Monthly" called attention to the value of improvements in the direction of seedless fruit. For many purposes in domestic economy, seedless fruit is desirable. In the grape, as is well known, the currant has held its own in this respect from time almost immemorial, and yet the currant of the grocery stores is nothing but a seedless grape. Fruits which seem, so to speak, to avoid seed bearing, never are as large as those which produce seed,—and this is the reason the currant seems so small in comparison to the raisin.

In the orange a great advance has been made in the line of the variety called the Navel. This also never, or rarely produces seeds. But in the apple and pear, and other popular fruits, although seedless varieties have been brought to popular notice, few of them have reached deserved popularity. In relation to the class, known as stone fruits, no attention has been given. If only a seedless peach could be obtained, it would prove a bonanza to commercial men,—and yet, so far as vegetable physiology is concerned, there appears to be no reason why a seedless peach could not be originated as well as seedless varieties of other fruits. The whole subject is well worthy of careful attention to those improvers whose chief object is to derive a fortune from scientific truths reduced to practice.

Early Tomatoes.—A few very superior tomatoes, from the hothouse of Mrs. S. A. Harrison, grown by her gardener, Mr. James Lawler, reached us on the 9th of March, and leads to the remark that few branches of vegetable gardening are more profitable and pleasant than the forcing of tomatoes. Even from the South tomatoes had not reached the market up to that date; and yet, one of the objections of forcing fruits and vegetables, common many years ago, is that it is so easy now to get them naturally from points further south. Forced tomatoes have also an advantage, which forced fruits and vegetables generally do not possess, in this, that to most taste they are far superior in flavor when forced to those grown in the open air.

THE CULTURE OF RASPBERRIES.—It is not generally known that the raspberry cane is hardy just in proportion to the amount of healthy leaves which will continue healthful to the last. If the leaves fall before the natural time for leaf-ripening, the wood has but a very low vital power, and is very easily killed by the first frost. Every effort, therefore, should be made to keep the leaves of raspberry canes healthy. Small and weak canes, should be kept down, and good manure, or other enriching food applied to the plants. The raspberry is especially fond of cool earth to grow in. It is indifferent to the temperature of the atmosphere, but does not like extra heat at the roots. To this end a mulching of any half-rotten material is an excellent practice in cultivating this fruit. Sometimes, in spite of all precautions, rust will attack raspberry leaves, or some other kind of fungus will make a home on the foliage—the leaves then die early, and the canes are not very strong. Under these circumstances, much profit ensues from bending the canes down and covering them with earth during winter. This prevents great evaporation from the canes, which is the chief source of injury. Early in the season, as soon as the frost is gone, the earth must be taken from the canes, otherwise the buds will push early and rot. With a little care in cultivation, with some such treatment as that described, the raspberry is one of the most successful of amateur grown fruits.

CORN STALK BEAN POLES. — Ruth Raymond, Harmonsburg, Pa., remarks, "Beans have been successfully grown with corn stalk support, notwithstanding your correspondent's skepticism. Sunflowers are also used with beans for the same purpose; and if the Mammoth Russian variety is chosen, there is no danger that extra supports will be needed for either plant. The sunflowers, however, are apt to shade the beans too much by their rank growth of foliage; this can be remedied by keeping most of the lower leaves picked off. It is doubtful if the beans grow as luxuriantly under either of these methods as when poled in the regular way. A part of the nourishment in the soil which should go to the bean, and possibly a very generous share, is appropriated by its neighbor. Yet it is a saving of labor, and that, too, of labor that cannot well be performed by women, to whom the work of garden-making often largely falls."

It may be noted that the earlier reference was to the Lima Bean, which is very heavy. It is common to grow soup beans and corn together. These are not so heavy as the Lima.

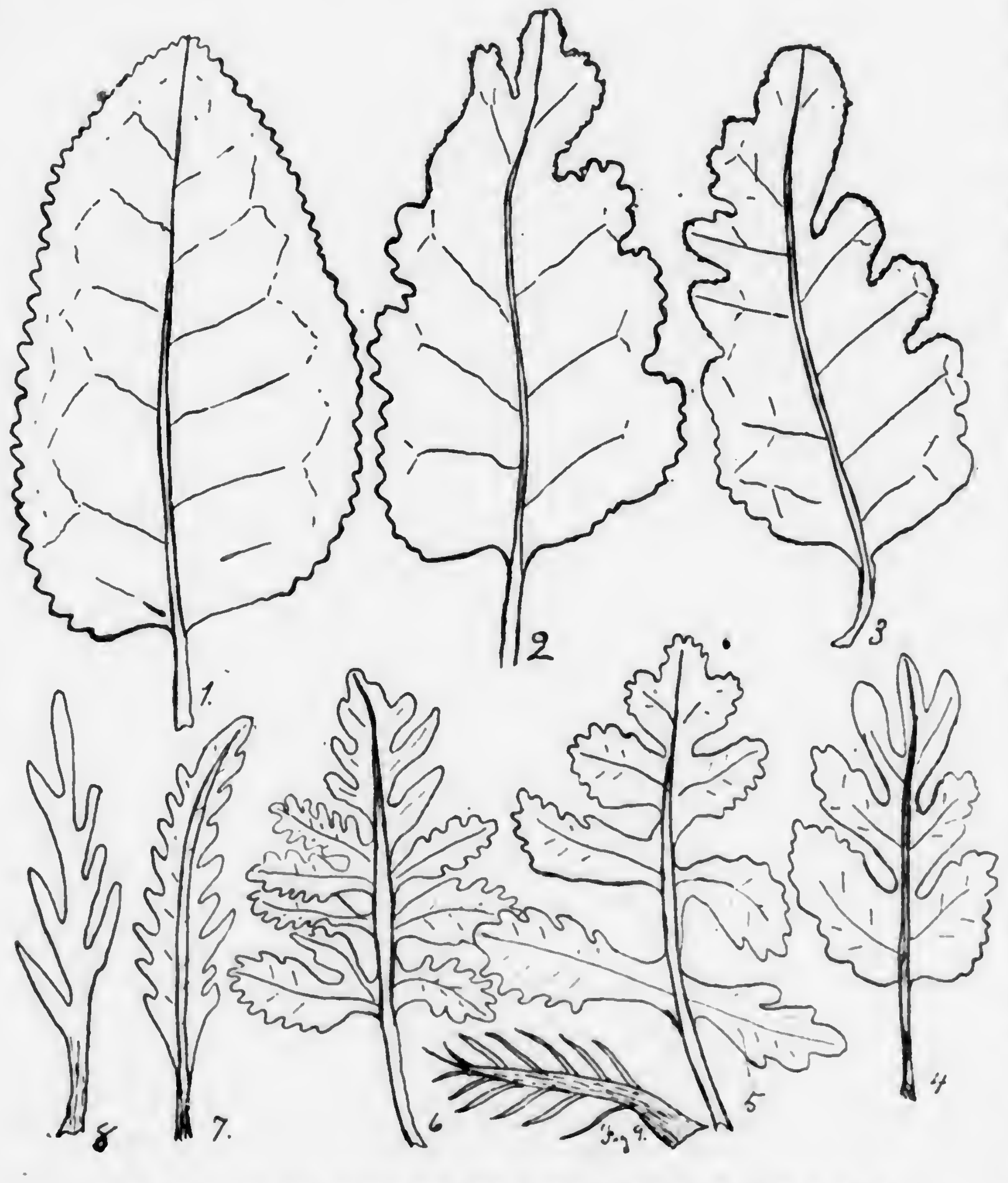
THE ENGLISH BLACKBERRY.—As a mere matter of size and flavor, the English blackberry does not begin to compare with the American, but in enormous productiveness it is far superior. It is remarkable that this fact has not been discovered until of late years. Under the name of Evergreen Blackberry, the cut leaf variety of the English blackberry, namely, *Rubus discolor laciniatus*, is getting wide attention in the West. It is a trailer, and is not so bush-like as the American blackberry, and the leaves remaining on all winter, justifies to some extent the name of evergreen. A picture issued by J. B. Hershberger & Co., which has been handed us as a possible exaggeration, can by no means be classed in this category. The picture is not in the least overdrawn. It is certainly one of the most abundant bearers, setting aside size and quality, of all the species of blackberry. Although long known in cultivation as a curiosity, it is only of late that its merit as an inmate of the fruit garden has been prominently brought out.

HEALTHY LEAVES—HEALTHY TREES.—A Geneva, N.Y., correspondent expects good crops of fruit the coming year, because last autumn the foliage continued healthy to the last. A more valuable lesson was never better told. Healthy leaves make healthy wood, and perfect health brings perfect functions. It should be the aim of all cultivators of fruits or flowers to retain the health of leaves up to the latest possible moment.

WEIGHT OF TOMATOES.—A correspondent of the London *Gardeners' Chronicle*, who has been raising plants under glass, finds twelve pounds to be the average weight produced by a single plant. There seems to be no record of the greatest weight a single plant would produce in America; but we should not be surprised if fifty pounds would not be an average for a plant under favorable circumstances.

ROOT PRUNING TREES.—Amateurs who have small gardens, frequently desire to have trees come into bearing before the lapse of many years. For this reason rapid growing trees are grafted on those of slower growing proclivities. For instance, the pear, which is a strong grower, is grafted on the slower growing quince. This checks the vegetative vigor, which is the desired point in inducing early fruitfulness.

Sometimes, however, it is not desirable to have trees grafted on these weaker growing stocks, but to have the early fruitfulness on trees with their own roots. The pear on the pear root, for instance, is preferable in many respects to the pear on the quince, providing it will only come into bearing without waiting long for this desirable result. Girdling is sometimes employed, but this is dangerous to the permanent health of the branches girdled, and those who have the time to spare have better results from root pruning. This simply means digging around the tree so as to cut off some of its roots. The distance will depend on the age and size of the tree. Suppose, for instance, a pear tree to be as thick as one's wrist, perhaps eight or ten years old, and still growing too vigorously to bear,—a trench may be dug out, four feet from the stem of the tree, two feet deep, and the earth filled in again; the usual result is that fruit bearing buds are formed the next year, or, at the most, a fair crop may be expected the second year after such an operation. If the tree had not thus been treated, it might have been several years later before fruit could have been obtained.



VARIATION IN HORSE RADISH LEAVES.--SEE P. 67.

FIRST-CLASS GRAPES FOR THE AMATEUR.—It is a well known fact that we rarely get the best varieties of fruit in the markets. The market man has to consider what varieties will travel best and what varieties can produce most abundantly; productiveness and carrying facilities are the chief elements which he necessarily has to look after. The amateur grower can always get much better fruit than he can get in market. In the matter of grapes, for instance, the Concord is the most popular with the market grower; it has the special qualifications which lead to profit; but the Concord in its best state will never equal many other varieties—some of them even very old kinds. "The Rural New Yorker" very pointedly states that a number of the Roger's seedlings, which were among the first of the great modern advance in grape growing, are still far ahead of the Concord in those properties which give value to a grape for the amateur, and it especially names, among these, the Wilder, the Lindley and the Agawam. The Delaware is however one of those kind which has been found both profitable and of high character otherwise.

THE VLADIMIR CHERRY.—The late Mr. Gibb, in the Eighth Report of the Minnesota Horticultural Society, says of this cherry that it is one of the most popular in Russian fruit gardens,—that it is a comparatively dwarf kind and is grown in bush form, and that even seedlings from it produce trees of a similar dwarf and bushy character, — varying, however, a little in habit—some being more upright and some more drooping than others.

BIOGRAPHY AND LITERATURE.

THE MAY QUEEN.

Of gauzy white her simple dress,
  Which they with garlands have enwound,
And on her youthful brow did press
  The wreath with which they her had crown'd.
I gazed upon the fragile child
  Who sat enthroned upon the green,
And watched her whilst she sweetly smil'd
  On those who claimed her for their queen."
JOHN INGRAM.

ISAAC BURK.—It is well to sing in praise of the modest violet, but unfortunately, it is a flower not often seen unless sought for. Thousands of useful people die unknown, while numerous less useful get fame and glory. This thought comes strongly forward while reading the obituary of Isaac Burk, one of the most useful botanists possibly of the many useful Philadelphia has produced. He died in Philadelphia on the 30th of March, in his 77th year. He put an immense amount of time and labor on the Herbarium of the Academy of Natural Sciences of Philadelphia, and much of the eminence of this great collection of dried plants in the earlier of its modern stage is due to him. In early life a merchant tailor, his health suffered, and in order to get open air exercise, he purchased "a route" as carrier on the daily *Public Ledger*, the balance of his time being devoted mainly to botanical pursuits. Under his guidance and example his family has become useful like the father. Reverend Jesse Y. Burk, an eminent Episcopalian Divine, is also Secretary of the Board of Trustees of the Pennsylvania University. Addison B. Burk is Chief Associate Editor of Mr. Geo. W. Childs' well known *Public Ledger*. Dr. Wm. H. Burk also on the editorial staff of the same paper, was the Botanist of the exploring party which carried Lieut Peary to Greenland, and Charles W. Burk is at the head of one of the great printing establishments. Mr. Burk, though his modesty brought him few honors while living, has surely not lived in vain. His good works will live long, though his name may not be brilliantly recorded.

YOUNG FORESTS AND THEIR INDUSTRIES.—This is a concise work, though in pamphlet form, by Dermot O'C. Donelan, and published in Dublin by H. M. Gill & Son for the price of sixpence. Ireland was at one time well wooded and harbored the true shamrock—*Oxalis acetosella*, under the shade of its forest trees. No woods are there now, but there is no reason why forests should not again be planted. Mr. D. points out the one reason why they are not is no reason ; namely that a tree would be of no service until it is half a century old. There are numerous trees that would come into great profit in half that time. Mr. D. believes the Government should take Irish forestry in hand. In our country we would rather offer premiums for people to do it themselves.

JOHN L. RUSSELL.—Rev. John L. Russell, one of the earliest of the Unitarian clergymen of Mass., was among the foremost in advancing the knowledge of small microscopic fungi, which has come to be so important a part of horticultural education. He was really far in advance of his contemporaries in his knowledge of these destructive agencies, and much of the great pleasure which the writer of this derived from his scientific correspondence is associated with the letters of Prof. John L. Russell ; his title coming from his having been elected as Professor of Botany to the Mass. Horticultural Society. Long before it was announced in any scientific serial, Prof. Russell's correspondence gave the writer his first knowledge of the agency of cork cells in causing the rifting of the bark in trees. Before Prof. Russell's researches, the doctrines taught in all botanical text books was that the rifts were caused simply by the mechanical expansion of the trunk. Prof. Russell discovered that the development of these cork cells at various periods in the life of the bark, was the real cause of these clefts. After this discovery it was easy to understand how every species of tree had its own style of taking on

the rough bark. We notice by the report of the Mass. Horticultural Society that Prof. Russell left $1000 in trust to the Mass. Horticultural Society, as a fund ; the interest of which is to be paid annually to some competent person, who shall deliver a lecture on the latest discoveries of the connection of fungi with horticultural pursuits. In this way the Professor happily thought to continue the work in his favorite study.

DAVID DOUGLASS.—Exploration to-day is very different to what it was a half century or more ago. Now we can get all the comforts of modern life up to the verge of the unknown, and return to civilization almost before we are missed. The labors and dangers of the earlier collectors for our gardens can scarcely be appreciated in our day, some of them losing their lives in our behalf. Few names are better known to flower lovers than that of David Douglass—the Douglass spruce alone would make him well remembered—and he too was one of those whose life was a sacrifice to science. Far away from home and friends he was killed by a wild beast in the Sandwich Islands. In the early part of the century gardeners were a remarkably intelligent class of men. Broad culture would often be found hand in hand with the spade and hoe. David Douglass was one of those humble but learned gardeners, born at Scone in Perthshire in 1798. His botanical tastes were fixed by a short term in the Glasgow Botanic Garden. Between 1823 and 1827 he explored the central and western part of our continent. It was on a second visit to America that he died as aforesaid in 1834.

DAVID DOUGLASS.

THE VICTORIA REGIA.—Dr. William H. Seaman, of Washington, District of Columbia, has issued, as a souvenir of the meeting of the American Microscopical Society in Washington, a beautiful folio edition of a paper published in the Proceedings of that Society—a compilation of all the leading points that have been brought out in connection with the history of the celebrated water lily, *Victoria regia*, It is illustrated by a beautiful frontispiece of the plant as it bloomed last year in Washington. It is one of the most useful contributions to our knowledge of this beautiful plant that has appeared for a long time.

DR. VASEY.—To the large list of able botanists of the past generation that have recently passed away must now be added the name of Dr. Geo. Vasey, for many years Curator of the United States National Herbarium, who died on the 4th of March in Washington. Like his predecessor, Dr. C. C. Parry, he was a native of England, having been born in Yorkshire, England, in 1822, but came to America at an early age. He took the degree of Doctor of Medicine in his twenty-fifth year, at Pittsfield, Mass., and shortly after removed to Illinois to practice. His love for botany soon placed him in the front line, and in the knowledge of grasses especially he became a leading authority. Besides his work on the National Herbarium, he has written leading treaties on trees and grasses.

THE FLORA OF PENNSYLVANIA.—A correspondent sends to MEEHANS' MONTHLY the expression of his delight that Professor Porter may issue some day a Flora of Pennsylvania. By such an eminently fitted authority he considers it would be a work of reference for all time, just as Dr. Darlington's local work, *Flora Cestria* for the wild flowers of Chester county continues to be.

GHIESBRECHT.—August B. Ghiesbrecht, a native of Belgium, but one of the best botanical explorers of Brazil and Mexico, and whose name is familiar to plant lovers, died at San Cristobal, February 7th, in his 82d year.

GENERAL NOTES.

Our Native Flowers and Ferns.—The conductors appreciate the hearty welcomes which continually come from intelligent people. The following sample from a North Carolina friend is the more appreciated, because it recognizes as Meehans' Monthly does, the good work done by contemporaries, whose success is as heartily desired as that of this publication :

"I wish to say that I think Meehans' Monthly is a credit to America, as it is doing a work for our 'American plants' that has been sadly neglected, so much so, that our American citizens hardly know what a Native plant is,—the majority not knowing that within our borders grow some of the finest trees, shrubs and plants that the world can produce, and having the peculiar advantages of adaptability and freedom from disease. And it seems to be the work of Meehans' Monthly, and we might add *Garden and Forest*, and in part the *American Gardening*, to teach our people of the treasures we have at our very doors. I sincerely wish you much success."

Science.—Light reading, and general newspaper literature, has made a wonderful advance of late years, with a rush to the extreme as frequently good things do. Solid information has been neglected until well educated Americans compare unfavorably with similar classes in the old world. A reaction now is taking place. Magazines, like Meehans' Monthly, find good encouragement, and general science is becoming more popular than ever. The weekly magazine known as *Science*, published in New York, now in its eleventh year, reports good encouragement, and it deserves all it gets.

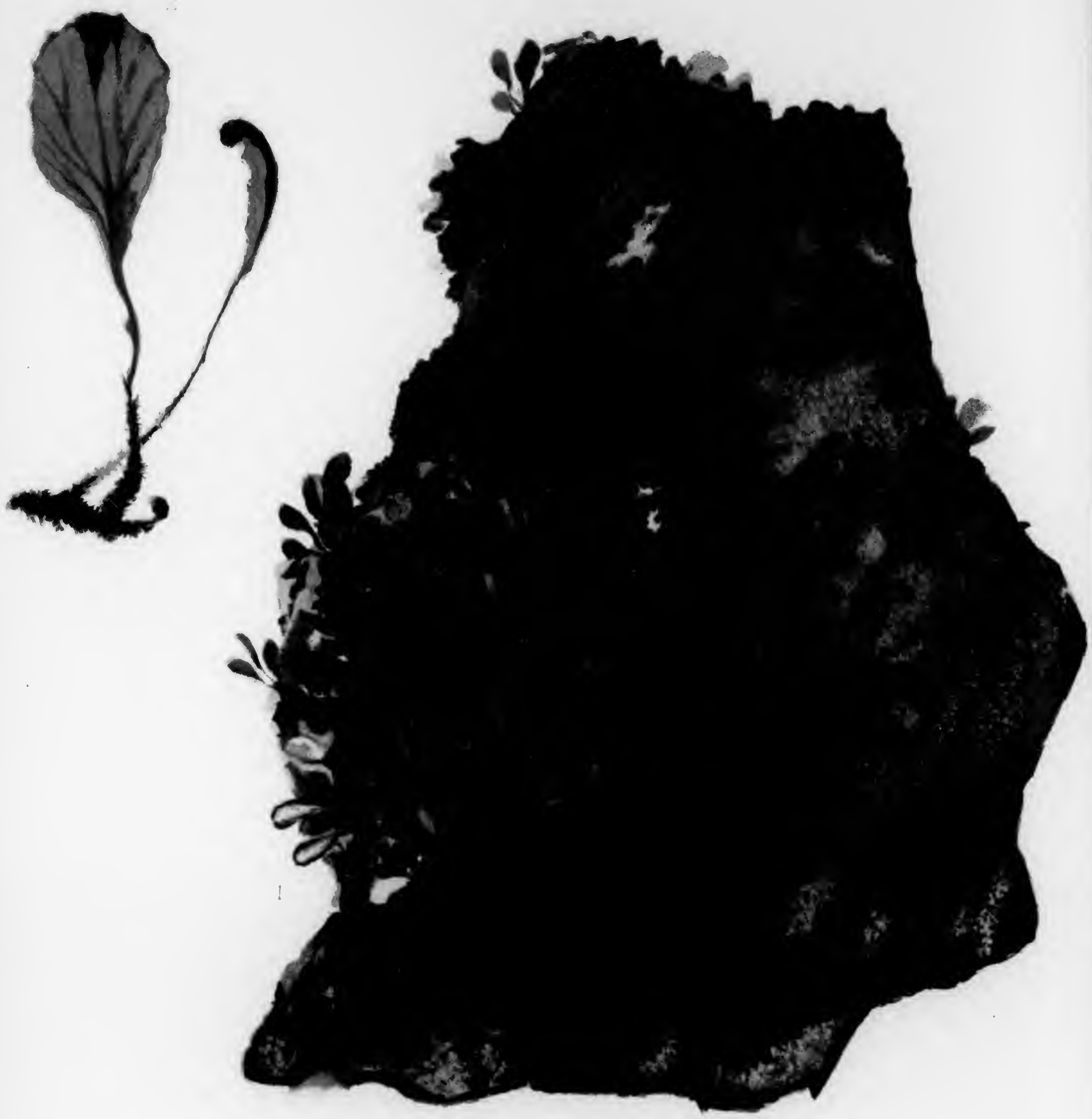
Sending Specimens by Mail.—Correspondents sending plants for name or examination to newspaper offices, should have their names on the envelope. With hundreds of letters arriving, it is often extremely difficult to connect the articles sent with the person sending it.

Early Death of Large Trees.—At page 59 occurs the sentence, "More old trees die early from want of food than from any other cause." A friend whose kindly criticism is always appreciated, remarks, "*old* trees die *early*—impossible!" In a strictly literary sense, the point raised by our friend is well taken, and yet the expression is fairly defensible. A man at 60 reaches old age—that is to say its early stage. If he reaches 90 that would be a *late* stage. There seems to be an early and a late stage to maturity as to all earthly things.

Pogonip.—This is an Indian word for fog, used only by the Washoe and Piute Indians. A correspondent, Mrs. Lewers, gives a graphic account of the great beauty of the trees of that section of the country under a pogonip that was suddenly succeeded by frost. Although with no snow, the shrubs and sage bush were covered with long, fine, snowy forms, some hanging down from the branches, others clustered and looking like flowers. The particular one referred to lasted eight days. Immediately on the sun coming out the frosted mist thaws and falls like dust, forming a picture of beauty rarely told in natural history.

The Next Plate.—One of our pretty native ferns, *Trichomanes Petersi*, will be the subject of the next illustration. This will be a treat to those who are strictly botanical, as it is among the rarest of American ferns; while the mere lover of wild flowers will be delighted with the delicate beauty of the fronds.

Indian Names of Plants.—United States Commander A. O. Ingalls, stationed at Murray, Idaho, is making a specialty of the study of Indian names of plants, and would be thankful for any aid any readers of Meehans' Monthly can give him.



TRICHOMANES PETERSII.

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PETERS' HAIR FERN.

NATURAL ORDER, FILICES.

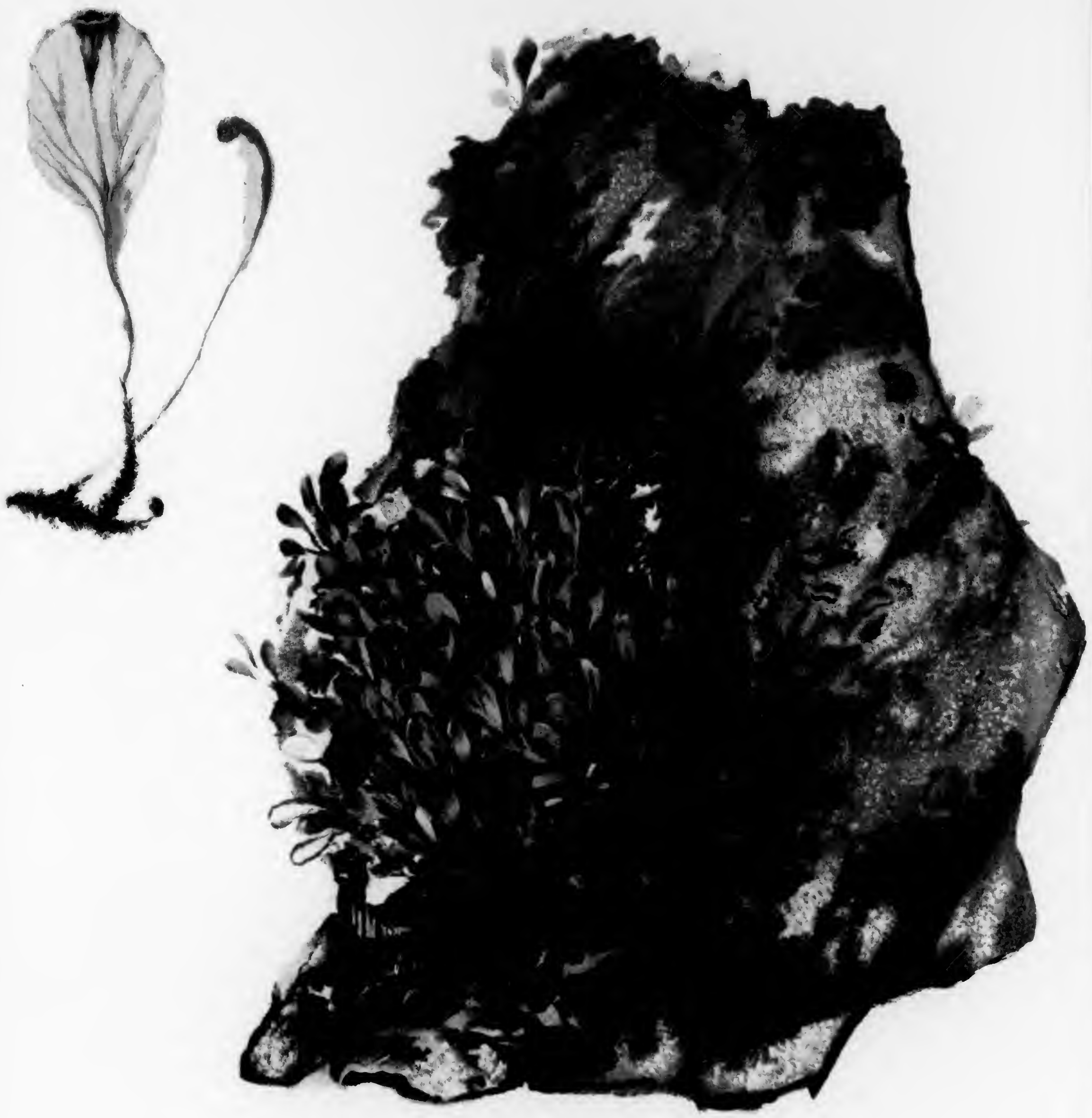
TRICHOMANES PETERSII, GRAY.—Very small, with entangled filiform tomentose root stocks; fronds oblong—lanceolate or obovate, entire or variously pinnatifid, narrowed into a slender stipe nearly as long as the frond, the younger ones with a few black forked hairs along the margin; veins forked, pinnate from the midrib; involucre solitary, terminal, funnel-shaped, the mouth expanded and slightly two-lipped, receptacle included. (Chapman's *Flora of the Southern United States.* See also Eaton's *Ferns of North America.*

This very singular looking fern would not be called pretty by the mass of observers; for under the idea of pretty we should have to consider gaiety, gracefulness or other elements of beauty; none or at least few of these does our little fern possess. Yet those who are favored by nature with the key to her secrets will see beauty where others fail. Tennyson's "Character" illustrates the lesson which may be taught here.

> "He spake of beauty: that the dull
> Saw no divinity in grass,
> Life in dead stones, or spirit in air;
> Then looking on as 'twere in a glass,
> He smoothed his chin, and sleeked his hair,
> And said the earth was beautiful."

After all if it should be decided that there is no great beauty in this species of fern as we see it in a picture or as a dried specimen in a herbarium, it adds remarkably to the beauty of the natural scenery amongst which it is found according to those few who so far alone have had the privilege of observing it. For it is one of the rarest of our native ferns, and has only been discovered with certainty in modern times. The first account of it in any text-book appeared in 1860 in the work of Chapman above cited, though it was described for the first time and named by Prof. Asa Gray in Silliman's "American Journal of Science and Arts" for 1853, in honor of Judge Peters, its discoverer.

The brown rock which line the mountain streams, or form the basin around which the spray collects from the waterfall, would lose half their charm but for the green mosses or ferns which have taken up their abode in the vicinity, and it is in just this useful work that our little fern is found engaged. It was first noticed on the eighth of January, 1853, by Mr. Peters on the Lipsey River in Winston County (then Hancock County), Alabama. In the compass of a square mile in the vicinity of its habitat, it has been found in only four localities, and always between the river and the bluffs, closely attached to sand rocks near a waterfall. On the shady side of these large sand rocks, it grows in bright green patches. The exact spot where it was first found was in Township 9, above the crossing of the Lipsey River, known as the Pidgeon Root Ford, and is now found above and below that on the east side of the river. Since then it has been found in other localities in the State, of which Mr. Charles Mohr, of Mobile, writes as follows under date of October 18, 1880. "The first time I found it in a new locality was on the Falls of Black Creek, on Lookout Mountain, Etowah County, Alabama, at an altitude of 1060 feet above the gulf, and subsequently in the rocky glen on the Lipsey fork of the Black Warrior River, near where Judge Peters made the first discovery. In the larger watered valleys of the Lookout and the Sand Mountain, open numerous chasms, penetrating into their deep table lands. The walls of these mountain gorges, often over 500 feet high, are almost perpendicular and built up by the rugged ledges and bold cliffs of sandstone, terminating in terraces over which the waters of the high lands rush on to the abyss, forming grand falls. Surrounded by the primeval forest, and shaded by mighty pines and gigantic deciduous trees, they present a scenery of grand and imposing aspect. Around these falls, in the gloomiest recesses among the rocks, in narrow clefts, or in or beneath the overhanging cliffs perpetually damp by the dripping water and completely secluded from the rays



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INTENTIONAL SECOND EXPOSURE

of the sun, this rare and peculiar fern spreads in dense masses over the rocky surface resembling at first sight a large liverwort. In this secluded spot it finds among plants of a higher order no associates, and only a few mosses and hepatica of an habit similar to its own inside its home."

In regard to Judge Peters whose name is so pleasantly associated with the discovery of this fern, the liberty may be pardoned of giving an extract from a private letter which is among the writer's botanical correspondence. "While I was wandering through these woods (northern Alabama) I met another person on the same errand of plant collecting, whom I soon found to be Thomas Minott Peters, of Moulton in Lawrence County, whom I found to be one of the kindest and most amiable of men. He was the son of a farmer at Clarksville, Tennessee, where he was born in 1810. They settled in Alabama in 1819. Thomas studied in the University of Alabama, graduated, and was admitted to the bar in 1836. He opened a law office in Moulton, and established and edited a newspaper there. In 1845 he is found in the Legislature, and in 1847 in the Senate of his State. When the Secession hostilities commenced he opposed the movement, abandoned his home, and entered the Union lines. His love for his native State however never deserted him, and his botanical library and herbarium has been generously bestowed on the University."

It is quite likely that new localities will be discovered, and possibly some new species added to the genus when the Southern country has been thoroughly explored. Pursh in his Flora notes having found in the mountains of Virginia what he calls *Hymenophyllum ciliatum* which no one has since gathered. It was for a long time regarded as "mythical;" but in the light of two plants like *Trichomanes radicans* and *Trichomanes Petersii*, so nearly allied to *Hymenophyllum*, being found there, it is not unlikely that the plant Pursh says he saw, may yet be rediscovered. The species abound in other countries, and each generally has a wide geographical range.

It has already been noted that the plant as it grows on the rocks under the spray of waterfalls looks very much like patches of moss, and it is remarkable that in many respects the plant has the character of moss. Indeed the *Hymenophyllous* Ferns, as these may be called, form a sort of connecting link between mosses and ferns. In most ferns the fronds last only a few months, and in those which are called evergreen, continue but about twelve months before they die; but the fronds of some *Trichomanes* have been known to continue several years, and in some cases they continue to grow after having apparently matured, and frequently they alter their form somewhat in these successive growths so as to lead botanists sometimes to believe that they have new species. In this persistent character of the foliaceous parts of the fronds they very much resemble mosses. But they resemble them still more in the cellular arrangement of these fronds. Sachs in his "Text-Book of Botany," notes that the lamina of the leaf consists in *Hymenophyllæa* only of a single layer of cells as in mosses, in all other ferns it is formed of several layers. Dr. J. Gibbons Hunt, of Philadelphia has confirmed these observations of Sachs, and further that the leaf blades are wholly destitute of stomata, or, as they are sometimes termed, breathing pores. But it will be at once seen that in a blade with but a single layer of cells they are unnecessary if the object be to bring the interior cells into contact with the atmosphere; for in this single layer they have all such contact directly. One might infer from a lesson like this what the uses of stomata were, though direct observation had not already taught their use.

There have been differences of opinion as to the derivation of the word *Trichomanes*. Sir W. J. Hooker says it is from *trichas*, *thrix*, hair, and *mania*, excess, "from the numerous hair-like exserted receptacles,"—that is to say the little thread-like columns around which the sporangia are gathered in the involucre (Fig. 2). But in olden times, many ferns were collected together under the name of *Trichomanes*, our present genus among others,—the name belonging originally to that which is now known as *Asplenium Trichomanes*,—and when the old genus was divided these plants were left with the old name.

WILD FLOWERS AND NATURE.

MOUNTAIN SCENES.

E'en now, where Alpine solitudes ascend,
I sit down a pensive hour to spend;
And, placed on high above the storm's career,
Look downward where a hundred realms appear:
Lakes, forests, cities, plains extending wide,
The pomp of kings, the shepherd's humbler pride.
—Oliver Goldsmith.

The Vanilla Bean. — In a paragraph recently, occasion was taken to refer to the Vanilla Bean of commerce as an orchid. A correspondent expresses interest in this and suggests that very few know this to be the case. We happen to have an admirable work in German, called Steen's "Orchideenbuch," in which are some magnificent illustrations of orchids, superior to anything in that line that we have ever seen, and we take from that for an illustration, see p. 90, *Vanilla phalaenopsis*, which will serve to show the characteristic of the Vanilla of commerce, which is, however, not the same, but a closely allied species, namely, *Vanilla planifolia*. It will be seen that this plant of commerce is not only useful, but pre-eminently beautiful.

Only peculiar species of insects can fertilize the flowers; cultivators of the Vanilla bean in localities where the insect does not naturally exist, go over the flowers with a needle, and remove the obstruction which prevents the natural access of the pollen.

It might be made a profitable crop in southern Florida or southern California. It is propagated by cuttings of the climbing shoots.

Senecio sagittifolius.—Just imagine a wild flower with leaves three feet long, and flower stems seven feet or more high, bearing about 140 flowers on a stalk, with each flower having white ray petals half inch long, and a yellow disc an inch wide! This is literally "a daisy." The American *Senecio aureus* will give an idea of what a wonderful thing this monster *Senecio sagittifolius* must be. It is a new species recently discovered in Uruguay by M. Andre, and figured in the *Gardener's Chronicle*.

Bees and Clover.—Statements are being made that the clover never perfected seed in New Zealand until bumble-bees from Europe were introduced there,—now statements are made that since the introduction of these bees clover produces seed abundantly. A few years ago the statement was made that the bumble-bee was essential to the proper fertilization of the clover. It was said that the position of the stamens and stigma was such that it was impossible for the plant to receive any aid from its pollen without the assistance of bees. The bumble-bee was supposed to enter the mouth of the clover flower, carrying on its exit pollen which was then introduced to the stigmas of the other flowers which the bees visited, and in this way the fertilization of the flower was brought about. This was the hypothesis presented in America. However it has been found by careful observers that the bumble-bee never enters the mouth of a clover flower,—it simply slits the tube of the flower on the outside and goes off with the nectar, without in any way touching the stamens or the pistil of the flower. Just why the bees of England and the same creature introduced into Australia should behave differently to the bumble-bee of America has never been explained. In America it is found that the first crop of clover rarely produces seed, while if this crop is cut and a new growth starts, the second crop produces seeds abundantly, and yet the visits of the bees to both crops may be exactly the same. So many statements of similar character to this of the relation of bees to clover are made without proper authentication that it leads one often to doubt the value of many scientific hypotheses.

Range of Rhododendron maximum. — Miss Bessie L. Putnam, of Harmonsburg, Pa., notes:

"Your correspondent in March number was right in thinking *Rhododendron maximum* might be found in Crawford Co., Pa. It has been found in Pymatuning swamp in western Crawford, not far from the Ohio line."

CALTHA PALUSTRIS.—Says Mr. C. L. Saunders:

"Mrs. W. S. Dana, in her book entitled, "How to Know the Wild Flowers," published recently, claims that this flower is identical with the "Winking Mary-buds" in the song in "Cymbeline":

"Hark! hark! the lark at heaven's gate sings,
And Phoebus 'gins arise,
His steeds to water at those springs
On chaliced flowers that lies;
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She makes this claim without citing specific authority, except the statement in Mr. Robinson's "Wild Garden" that the marsh marigold is so abundant along certain English rivers as to cause the ground to look as though paved with gold at those seasons when they overflow their banks.

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Keep on sympathizing with Mrs. Dana. Prior and other moderns are but following others in advance. Thomas Green (1820) quotes James Rowley, a dramatist co-temporary with Shakespeare, "The Marybudde that shootethe with the light" as being the "marigold" of moderns.

It is evident that Shakespeare had another plant than marigold in mind, because he uses the term "marigold" in "Winter's Tale;" though there may have been different plant names then as now, it is hardly likely the same person would use one day one name and another the next. Again, Shakespeare is describing an English scene in nature; but the marigold is a garden and not a wild plant as the *Caltha* is. And it is probable from the whole context of the play that it is a Spring scene, but the marigold is not in bloom till Summer begins.

Another argument is derived from the name. The months in the Roman calendar are derived from great personages or myths. May is from Maia, the mother of Mercury. The month of May, the month of Mercury and of Mary, the mother of Jesus, have become almost synonymous. The festival on the first of May to Maia is as often given in honor of Virgin Mary in the North of Europe. The Caltha in these boreal regions is the earliest Spring flower, and is often not fairly open on the first of May. Still the buds with their yellow tips were gathered and wreathed into chaplets to crown statues of the Virgin during the festival.

It seems not unreasonable that "marsh buds" should be called "Marybuds." Somewhere the writer has seen the statement that Mari, Marish, or some such form of word is the original of our modern "marsh," and if so Maribud would be simply "marsh buds" which would have done as well for an unopened flowers in those days as "Rose bud" does in ours.

RANGE OF THE AMERICAN HOLLY. — Mr. Ellis B. Noyes, Lewistown, Pa., has found American Holly in sheltered woods at Abington, Plymouth Co., Mass, 15 miles from the coast, with a few berries on one of the trees. W. L. Foster, Hanover, also in Plymouth Co., Mass., finds it "quite common in the moister and richer woodlands of this county, near the coast. It must be rare north of Boston. Twenty miles south of Boston, it will make a small tree, six or eight inches in diameter of trunk. It is never found aglow with berries as further south. In Martha's Vineyard are trees three feet in circumference. Sheltered from the Winter's sun, it would probably be hardy considerably north of Boston."

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INTENTIONAL SECOND EXPOSURE

PINUS EDULIS.—A correspondent in Nevada kindly sends samples of Piñon, much larger than the nuts usually seen from *Pinus edulis*, almost as large as those from the well known *Pinus Pinea*, the Italian Pine. Suspecting some different species—the lady writes about them:

"Every fall when the Washoe Indians are going to pine nut, about 40 miles south of Washoe Valley I ask them to bring me burrs and branches, and still they just bring me pine nuts to eat. They cannot imagine what else I want with them. From what I can learn from an Indian woman to-day, about the large nuts, I think she gathered them of young trees. She said, 'small trees, large burrs four or five inches long, and not many,—large trees, small burrs, and plenty all the same kind of tree.'"

THE ODOR OF CLOSED ROOMS.—A lady asks, "Why do textile fabrics when kept wet in summer time become *offensively* sour smelling? Is it due to the development of life germs or to lower orders of plant or animal existence?"

With little thought one would answer—mildew generates in close dark rooms where there is moisture to develop it,—but on careful reflection it would seem that the odor referred to from carpets and similar fabrics, is not the same as the odor from a mildewed wall. Very careful observation by a "specialist" would be required to answer the question intelligently.

THE YELLOW TRUMPET LEAF.—Mr. Charles W. Henry, one of the Commissioners of Fairmount Park, Philadelphia, sends from Pass Christian a beautiful bunch of *Sarracenia flava*, the first living specimens seen by the conductors, who learn for the first time, that these beautiful flowers are odoriferous, the fragrance resembling that of the tulip poplar or some of its allied magnolias.

THE LIFE OF BEES.—Bees seldom live over a year, and but a few months—it is generally supposed in most cases. Large numbers of dead bees are found under Wistarias, Judas trees, and other early flowering plants, and it is often attributed to some poisonous quality in the flowers. It is simply cases where the bees' "time has come."

JERUSALEM ARTICHOKE.—The pretty native plant of the Atlantic States, *Helianthus doronicoides*, and of which the double perennial sun-flower of gardens is a form, has tuberous roots, is believed to be the parent of the Jerusalem artichoke, not a bad, though now seldom used vegetable. A native of North America, efforts have unsuccessfully been made to trace the origin of its name. Girasole signifies in Italian turning with the sun, and, as Helianthus is a "sun flower," from the sun-picture style of the flower, it was thought to have started the corruption Jerusalem from Girasole.

DODDER. — The well known parasites, species of *Cuscuta*, which seem like masses of coarse threads over the plants they feed on, are great pests to the farmer in the old world. The flax dodder—the kind preferring flax—is *Cuscuta Epilinum*, the one favoring clover, is *C. Epithymum*. Farmers are fined who allow them to spread, and children in the public schools are taught to know and destroy them.

CLOVER DEVIL.—Clover devil is the common name in Germany of the *Orobanche minor*, a fleshy and rather pretty plant, parasitic on the roots of clover. It has been introduced to America with European clover seed, but something in soil, climate, or conditions seems to be unfavorable to its spread. It sometimes is so abundant in cloverfields in the old world as to render the whole crop valueless.

NOTE ON MITCHELLA REPENS.—Miss Bessie Putnam says:

"We were much pleased with the plate in April number; it is a fit companion for the Trailing Arbutus in February magazine. Did you ever try putting the leaves in the grate where it is so hot as to almost but not quite burn them? They become inflated and resemble miniature puff balls in form."

PROLIFEROUS DANDELIONS. — Mr. Frank N. Tillinghast, of Greenport, N. Y., sends the finest specimen of prolification in the dandelion flower that we have ever seen. The stalk was as thick as an average asparagus; while the head of flowers more resembled a huge chrysanthemum than the ordinary dandelion head.

GENERAL GARDENING.

PARK SCENERY.

Parks with oak and chestnut shady,
Parks with ordered gardens great,
Ancient homes of lord and lady,
Built for pleasure and for state.
—TENNYSON.

AMERICAN FLORAL ENTERPRISE.—Seibrecht & Wadley, the well-known florists of New York, according to a correspondent of the "Gardeners' Chronicle," have a very fine establishment fourteen miles from the Port of Spain, in Trinidad, which they carry on under the name of the United States Tropical Nursery Co. Here they raise immense quantities of Palms, Dracænas, Pandanuses, and other plants, which they use in their American sales. These are shipped to New York during June, July and August. For transit purposes they contract with steamers, which set apart a certain portion of their space for the purpose. Even large cocoanut palms have been brought from Trinidad to New York in that way with perfect success. Although they have comparatively, or really nothing, that we would call here winter, it is still found better to raise the seeds of many things artificially, and for this reason they have glass houses there as we should expect to have in this climate, although they are built very low and close to the ground,—indeed while we have to protect against frost, they have to protect against heavy tropical rains, which would completely wash seeds away if dependent wholly on the open ground. Enormous numbers of the beautiful fern, *Adiantum Farleyense* are also raised there for importation here. *Latania borbonica*, one of the best known and useful of palms for American decorative purposes, are raised here in immense quantities. A large number of other species are also grown on a smaller scale. Here they also experiment with rare palms, and smaller trees from other countries. The celebrated palm, called the "Travelers' tree," *Ravenala Madagascariensis*, is growing here, and last year commenced to produce seeds. Curious plants, like the Black Pepper tree, are also grown, as well as kinds required for florist decorations. The management is under the immediate direction of Mr. H. W. C. Dihm.

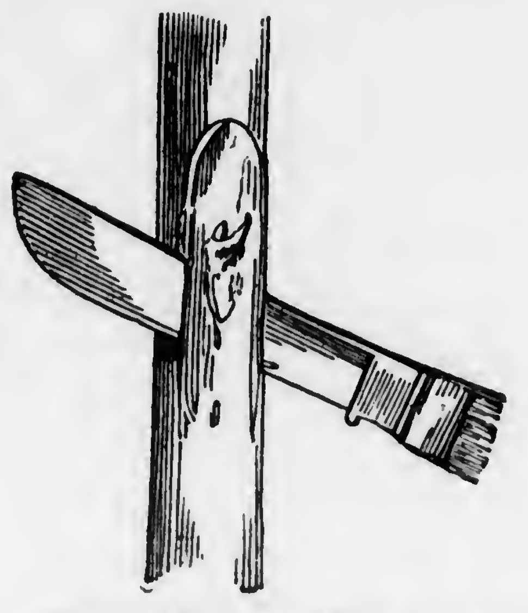
ARSENITES FOR THE DESTRUCTION OF INSECTS.—Lee, the Chicago gardener, who first seems to have made use of Paris green to destroy the potato beetle, deserves as much renown as Parmentier who made the potato popular. It is wonderful how the idea has grown,—and still more the practical results. Not only insects but fungus diseases are no longer dreaded by the intelligent cultivator. Copper sulphate is now kept on hand as a necessity equal to the manure pile. Professor John Craig, horticulturist of the Canadian Central "Experimental Farm" (Experiment Farm is probably intended), at Ottawa, uses Paris green with the copper sulphate for spraying as follows:

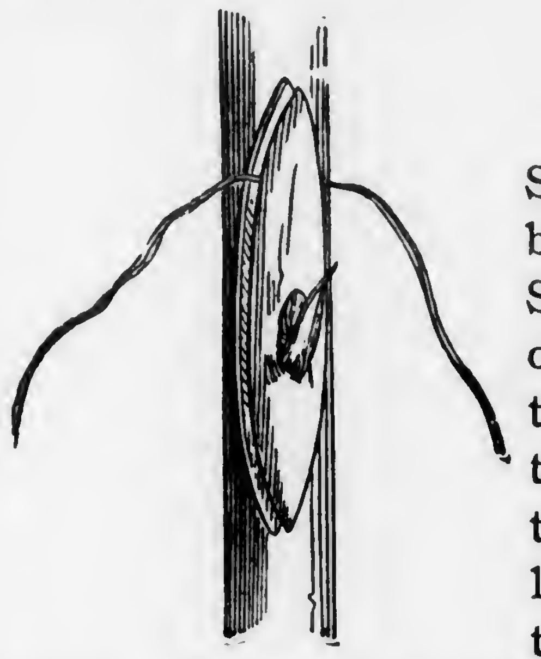
Copper Sulphate . . .	4 lbs.
Lime	4 lbs.
Paris Green	4 oz.
Water	50 gallons.

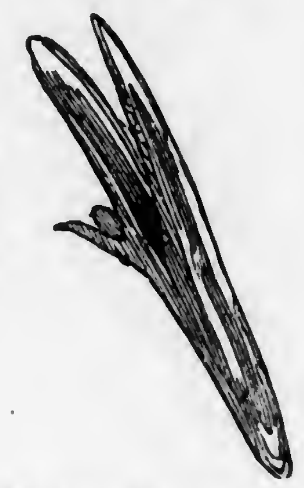
This may be prepared by dissolving in a barrel, four pounds of powdered copper sulphate. In another vessel slake four pounds of fresh lime with as many gallons of water. Spread a piece of coarse sacking, held in place by a hoop, over the top of the barrel in which the copper sulphate has been dissolved. Strain through this the creamy mixture of lime and water. Paris green may then be added, after which the barrel should be filled with water. This forms an excellent insecticide as well as fungicide, and is, therefore, useful to destroy codling worm, bud moth, and canker worm. It should be used soon after being prepared.

PARAGUAY TEA.—Prof. E. J. Wickson, of the Agricultural Experiment Station at Berkeley, California, has reason to believe that the Paraguay tea, *Ilex Paraguayensis*, could be profitably grown in California. He would be very glad if any one who has the opportunity will send him a few seeds for trial.

Budding.—Propagation by budding is simple. A bud is cut out of a half mature shoot, and then inserted under the bark of another branch, called the stock. It can be done only when the bark is found to lift easily. Sometimes this may be till late in summer. Seedling peaches may often be operated on till the first of September. It is only by the edges of the shield-like bud that the union takes place, and hence American propagators wonder why their English friends take so much trouble to take the wood out from under the shield. The annexed cuts show this effort in the old world, where even a piece of thread is used to get the wood out easily. No American thinks of it.







Winter Room Gardening.—Miss Putnam says:

"It is not generally known that blossoms of apple, peach, cherry, etc., or any plant that perfects flower buds in autumn, may be easily secured in midwinter. If twigs of said plants are placed in a glass of water and given plenty of light with as much of sunshine as the season allows, they will soon present a mass of bloom."

A New American Rose.—Notwithstanding the favorable conditions for raising new roses, very little attention has been given in America to this interesting branch of floriculture. Just now California is credited with a new and valuable variety, which is called Sarah Isabella Gill. It is said to be a deep yellow, quite equal to the famous "Pearl of Gardens," yet has a bud of the character of the well known Mermet.

Coal Tar to Protect Trees from Injurious Insects.—Discussions continue off and on in agricultural and horticultural newspapers as to whether coal tar is or is not injurious to the bark of trees. It has often been recommended, in order to paint around the base of trees that are liable to the attacks of borers—for instance, the apple borer, quince borer and peach borer. Certainly, the writer has known of cases where it has been applied without the slightest injury, while there are undoubted cases of trees having suffered by its use. Just how this variation in effect comes about is not clear, nor does it much matter to the practical man. It is safe to say that sometimes coal tar so applied is a serious injury; but why use coal tar at all? Pine tar is just as effectual in preserving trees from the ravages of these noxious insects, and certainly does no damage to the tree. It is one of the best preventatives against the inroads of stem borers, that is, when these borers operate near the ground, and it is also effectual in preserving the trees from the ravages of mice in winter time. Many trees, especially in regions where the ground is covered by snow in the winter time, suffer seriously from the attacks of mice.

Valued Timber Trees.—In our country where timber is so abundant and prices, as a rule, are low, it is difficult to estimate the high figures which are placed on trees in some parts of the old world. A German paper states that in the prosecution of a railway line it became necessary to remove a large cherry tree; the proprietor demanded about $1,500 for it; this the railroad company objected to paying. But after some legal work the owner was awarded $1,100 for the tree. We suppose it would be a long time before any one would give such a high price for any single tree in our country.

The Dahlia Stem Borer.—Mrs. Wilhelmina Seliger describes in the *Hartford Times* a borer affecting the main stems of the Dahlia. As in all cases of stem borers, the flowers are much injured in size and the whole plant weakened by the operation of the insect. So far as Meehans' Monthly knows this is the first public intimation of the existence of such an enemy to the Dahlia.

Gardening in the Desert.—One can scarcely understand the full force of the expression, "To make the desert blossom as the rose," than by going across the deserts of our continent before human beings settle thereon,—and then to follow a few years after, when civilization has once obtained a foothold. The writer of this paragraph once traversed the great Nevada desert when there was little else besides alkali, rock and sage brush. To see such a pretty little picture as the one now illustrated on just such a spot, seems remarkable. It is a portion of the garden of a good correspondent of Meehans' Monthly, at Franktown, Nevada. The large, shrubby bush, most prominent in the picture, is evidently the Mist Tree, or, as it is sometimes called, Green Fringe Tree,—the *Rhus Cotinus*.

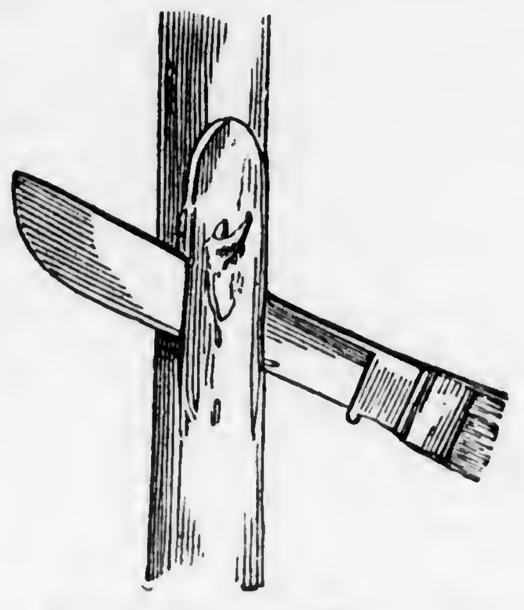
A GARDEN IN THE NEVADA DESERT.

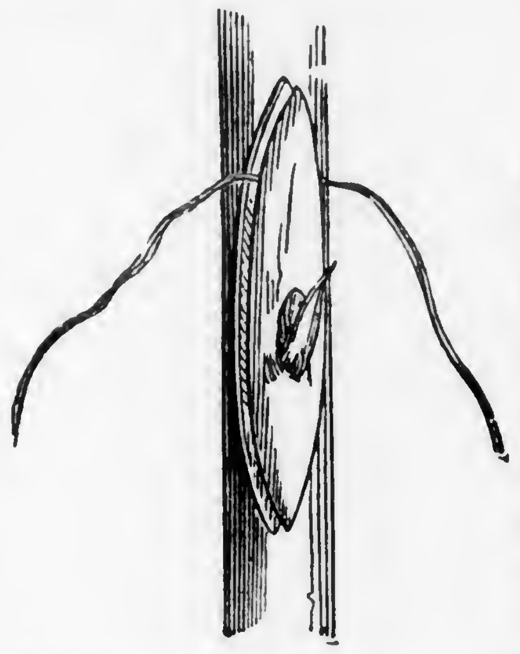
Rosa rugosa.—A very large number of hybrids between *Rosa rugosa* and other garden roses are now being introduced—all of them said to be extremely hardy and very beautiful. One of the most remarkable features in connection with this rose is its great variation in the size and form of the fruit. Even without any chance of hybridization, some of the seedlings will produce fruit as large as plums. In the case of hybrids, very different kinds of plants have been obtained from the same seed. The writer of this paragraph crossed one flower of the *rugosa* with the pollen of Gen. Jacqueminot, and, although two plants were raised from this single seed vessel, one of them was as near Gen. Jacqueminot as it possibly could be, while the other was truly and simply *rugosa* and nothing else.

Spraying Insecticides and Fungicides.—Mr. Craig, the intelligent horticulturist of the Canadian Central Experiment Station, well observes that in order to make spraying effective it must be commenced early. All parts of trees or plants must be reached with the preventive agent. Drenching is not necessary and is expensive. A thin film or coating of the fungicide deposited upon the foliage will prevent the development of the spores as well as a complete soaking; but it is important that all the leafy surface should be wetted at least on the upper side.

Large Carnations.—Mr. John Thorpe thinks the model Carnation should be four inches in diameter. It is well to have a standard to work up to.

Budding.—Propagation by budding is simple. A bud is cut out of a half mature shoot, and then inserted under the bark of another branch, called the stock. It can be done only when the bark is found to lift easily. Sometimes this may be till late in summer. Seedling peaches may often be operated on till the first of September. It is only by the edges of the shield-like bud that the union takes place, and hence American propagators wonder why their English friends take so much trouble to take the wood out from under the shield. The annexed cuts show this effort in the old world, where even a piece of thread is used to get the wood out easily. No American thinks of it.





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"It is not generally known that blossoms of apple, peach, cherry, etc., or any plant that perfects flower buds in autumn, may be easily secured in midwinter. If twigs of said plants are placed in a glass of water and given plenty of light with as much of sunshine as the season allows, they will soon present a mass of bloom."

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INTENTIONAL SECOND EXPOSURE

THE PRAIRIE ROSE.—Recently garden literature has much to say of the beauty of the wild, single form of this American rose. It has been long cultivated in the nurseries of the conductors of this magazine, and they can cheerfully bear testimony to the special beauty of this species. It comes into flower just as the ordinary garden roses are going out, and before the fall blooming roses appear, and the flowers, though each comparatively small, are borne in such immense clusters that the effect from the beauty standpoint is very grateful. One singular point about the rose is, that when found growing wild north of the Potomac, as it often is—indeed the specimens under cultivation as before cited are from Pennsylvania plants—they seem to be perfectly sterile, never attempting to make any seed, and for this reason no opportunity has been afforded to endeavor to improve the race by seed; but it must produce seed further south, as the Baltimore Belle and Prairie Queen, were raised in Baltimore from these wild plants by the late Mr. Samuel Feast. In native localities further south, it seems to produce seed freely, at least the writer of this noticed it producing seed abundantly in the cave regions of Kentucky, and round the Kahokia mounds in Illinois near St. Louis.

VANILLA PHALÆNOPSIS.--SEE P. 83.

DOUBLE FLOWERS. — A correspondent inquires how double flowers are produced. Nearly all the double flowers of gardens were first found wild. Double buttercups, double primroses, double daisies, double roses, and many other things were first discovered among their wild fellows and introduced into the gardens. The florist, however, can produce double flowers. He watches this tendency in nature. If a flower usually has five petals, and he discovers that some of the stamens have somewhat of a petal-like character, the pollen is taken from these flowers and others in a normal condition fertilized with this pollen. This tendency once started is then given to the progeny. Almost any species of plant will in this way be capable of producing double flowers. It is surprising that with this knowledge, more attempts at this line of improvement in ordinary garden flowers are not made.

STEAM HEATING.—Judging by the horticultural literature of the old world there seems to be a doubt whether steam heating can be made a great success—hot water being in general use there. The dread seems to be that steam requires much more personal attention than hot water. But American invention has so simplified things that it really requires little, if any more labor to look after the houses, or a large series of houses heated by steam than when heated by hot water,—while the advantage of carrying heat to long distances very rapidly are so much in favor of steam that instead of its being a question with us as to whether steam or hot water is the best, hot water is really going out of existence.

ROSE ACACIA.—One of the most beautiful of garden shrubs, *Robinia hispida*, has nearly disappeared from cultivation through the ravages of the locust borer. The pretty *Robinia viscosa* meets the same fate. All of the many varieties so popular in European gardening suffer equally with these.

THE CHRISTMAS ROSE.—This is not a rose but more near a buttercup, deriving its name from flowering about Christmas time. Near Philadelphia, this season, it was in bloom on Christmas day —the season being more open than usual at that period. It is entirely hardy and may always be had in the open air in our country, provided the plants are sheltered a little with dry leaves. The flowers will open and blossom under these leaves. It is very common when cultivated in gardens of the old world, but not nearly as much in our gardens as it deserves to be. What is remarkable is, that the flowers in the open air with us are odorless, but when cultivated in greenhouses, as they frequently now are by florists, for the sake of their flowers, are quite sweet. Possibly if this clew be followed up by a close observer, it might lead to a discovery of the causes of odor in flowers.

DISEASE IN CARNATIONS.—During the past year or two a very troublesome fungus disease of a rust has appeared among winter blooming carnations to the dismay of the florist, cutting down the product of his plants nearly one-half. It has been discovered that this species of fungus belongs to the genus *Uromyces;* and on account of its affinity for the carnation has been named *Uromyces caryophyllinus*. Like so many of these, it easily gives away to the copper sulphates. Prof. Arthur says that the sulphates of iron, or green copperas have been found to be generally as effectual as the sulphate of copper, or blue copperas. He says that there is already prepared in the drug stores a mixture known as copperdine, which is ammoniated copper carbonate. This ready preparation may be of great service to those who have not the time or disposition to make a mixture for themselves.

PRUNING ROSES.—It is often very desirable to have hybrid perpetual roses flower freely in the fall; to accomplish this the plants should be severely pruned after the June flowering. Some growers cut almost the whole of the flowering branch away, leaving young shoots from near the bottom to take their places. An abundance of flowers usually follows this treatment.

Those who cut their rose buds before mature, or as soon as the petals fade, have fall flowers freely.

FRUITS AND VEGETABLES.

VIGOROUS GROWING PEAR TREES.—A Chestnut Hill correspondent speaks of the extreme vigor of pear trees planted out a few years ago, and inquires what will bring them into a bearing condition. It is to be remembered that what is known as the vegetative force in plants is in antagonism to what is known as the reproductive force,—and it is generally after the vegetative force has been in some respects checked that the reproductive forces have a chance of showing much energy. For this reason it is the custom of many, when they wish to bring into bearing trees which show a great propensity for growth rather than flowering, to dig around them, and in that way cut off some of the roots, which lessens their power of nutrition, and this generally throws them into a bearing condition in a year or two. Others carry out the same object by comparatively starving the trees, that is, shortening the supply of top dressing; but root pruning is the method generally employed. In one sense it is all the better for trees to grow vigorously and to be a rather long time in coming into bearing, because such trees have very long and fruitful lives, while those which come into bearing early in their existence are usually short lived, and are much more subject to disease than those which grow healthily along for several years. The cultivator must judge a little for himself in this matter. Sometimes a very healthy tree can spare a little of its vegetative vigor without any serious injury,—then one may root prune; but unless the vigor is extraordinary and something unusual, the best method is to allow the trees to come into the reproductive stage naturally, and without aid from art.

PEARS FOR AMATEURS.—The characteristics of good market pears, — solidity, abundant bearing, standing rough usage, and similar points—are not always the best characteristics for a fruit that we would desire to grow for themselves. The Bartlett, Sheldon, Belle Lucrative, Beurre d'Anjou, Beurre Bosc, Seckel, and for an early kind Doyenne d'Eté, can seldom be had in the market, but are very desirable for one's own garden. Even kinds like Buffum, taking little room, have advantages for small gardens.

Pruning Fruit Trees.—In traveling through Pennsylvania and Maryland, one is especially struck with the want of correct information in regard to the pruning of fruit trees. In many cases apple trees are as thick with branches as if they were gigantic brooms. Branches should never be allowed to set as thick as this. Trees to be healthy require an abundance of healthy leaves. An abundance of poor and half-starved leaves is of little consequence. When branches are thickly crowded as these are, the mass of leaves are inferior and of very little good. Branches should be kept thinned out, so that those which are left have abundance of room to develop healthy leaves. In most cases under observation, the trees have twice as many branches, at least, as ought to be left. It is, however, generally too late to think of pruning after trees have been left for many years in this unkempt condition. The best time for pruning is in the summer when the shoots are made. A proper thinning at that time, and carried on every year, would keep the main branches in first class condition.

Corn Culture.—In 1890 experiments were made in the Cornell Experiment Station in regard to the value of cutting off the tassel from every other row. The increased yield of corn was 50 per cent. In the Delaware College Experiment Station last year, experiments were repeated and gave an increased percentage of 7 per cent. Many similar experiments have been made, usually with the result of an increased weight of corn. Although the percentage varies considerably, it would appear that on the whole it is an advantage. The tassel has to be taken out very early,—as soon as it can be perceived within the upper leaves,—with a twisting and pulling motion, it snaps easily and is then withdrawn.

Plum Culture.—As a general rule our orchard trees, after being set out, are left entirely to nature, and when the question of pruning comes, as it frequently does in discussions before horticultural societies, it is interesting to note that no one can give any sensible reason for advocating pruning on the one hand, or no pruning on the other. But the plum is a tree that is especially healthful only when a limited number of branches are left on the trees; and for this reason the weaker and poorer class of shoots should never be allowed to exist. When the trees are young, one should keep an eye to the branches that are likely to be the most vigorous, and many of the weaker ones should be at ones taken away. This suggestion is, in a measure, true of all fruit trees. A limited number of large, heavy vigorous leaves is of much more consequence to the vital power of the tree than a large number of half starved leaves would be; but, true as this is with most fruit trees, it is particularly true of the plum. The go-as-you-please style of raising plum trees rarely results in remarkable profit.

Dwarf Apples.—There are two kinds of apples which never attain a large size—species which always continue low, and have a meagre growth. One of these is called the Paradise Apple, and the other the Doucain Apple. For those who wish to have apples fruit very early, and not to occupy much space, the ordinary kinds of apples are grafted on these stocks. These are known commercially as dwarf apples. Those grafted on the Paradise are the dwarfest. Those on the other stock frequently make trees nearly as large as those grafted on the ordinary apple stock used for orchard trees. So far as we know these dwarf apple trees in our country are only used as curiosities in small gardens. A correspondent, however, desires to know whether any attempt has been made to grow these as a crop for profitable market purposes. Our impression is that they have not, nor do we think it is possible that they could be; but we should be glad to know whether anyone has actually tried the experiment.

Time for Grafting.—It is not generally known, but Meehans' Monthly takes pleasure in giving the secret to its readers,—that the longer scions can be retarded, the more certainty there is of success. For instance, if grafts of Pear are cut in the winter, and stuck in the ground like cuttings, they will keep green without sprouting for months. The Pear tree to be grafted may push into leaf in May,—but the grafting may not be done till June or later. The unsprouted cuttings used as grafts, grow with surprising success. The writer has known some of these to be successfully grafted even at the end of July.

Rapid Growth of Trees.—It has often been said, that as soon as you can excite a personal interest in the planting of trees, the forestry question will settle itself. One of the mistakes too frequently made is, however, the encouragement of the idea that it takes centuries to get trees large enough for timber purposes. If properly planted and properly cared for, as they ought to be in a well ordered forest plantation, growth is extremely rapid, and good timber trees could be obtained within a quarter of a century. Near where this paragraph is written, there is a specimen of Silver Maple, *Acer dasycarpum*, not fifteen years since it was a seed, which is 4 feet 6 inches in circumference; and an American Elm, about the same age, which is 5 feet in circumference. Facts like these could be easily multiplied, showing how easy it is to get profitable forests in a very short time when the great public necessity and consequent profit becomes a matter of exact figuring.

Champagne.—"Lippincott's Magazine" for December says that the vineyard district of France, from which is produced substantially the world's supply of champagne, is contained within an area of thirty miles square; with Reims as its commercial and cathedral city.

The vine-lands in this area produce the white, red, and black grapes from which champagne is made, and yet these same roots planted beyond the confines of this district fail to produce grapes from which the high quality of wine, perfect in bouquet and flavor can be obtained. Again, with all the care and attention given to the cultivation of the grape here, it is impossible, from year to year, to attain to anything like uniformity in the quality of the harvest from the same vines. Even in the best years some portion of the harvest will fall so far below the required standard that its product can only be labelled and sold as a cheap or rejected wine. There is no doubt, however, that the champagne houses of France, after learning something of the nicety of the palate of their customers, cater accordingly.

Grape Culture in California.—The European grape which does not succeed in the Eastern States, finds itself at home in California. The vineyards of California are chiefly made up of varieties of the European stock. So successful is it in that climate, that it frequently attempts to make two crops a year. The effort in cultivation there is to prevent it making the second crop, as it is believed that this interferes with the abundance of the earlier crop the following season. The yield of grapes per acre is usually four tons, but it is believed that if the grape there could be prevented from bearing a second crop, that the yield per acre would be six tons. It is said that particular systems of pruning are more responsible for this second crop than peculiarities of climate.

Beurre d'Anjou Pear.—Where this fine, early winter pear is handled with intelligence, with knowledge how to mature it properly, it is one of the very best of all Winter pears for the amateur. Every one knows how apples can be preserved by being packed tightly in barrels; but very few can do this with a pear. But this particular variety, under the hands of such intelligent managers as Ellwanger & Barry, of Rochester, has been preserved in barrels pretty much as one might do with apples, and they can be kept for a considerable time in this condition. Where they are suffered to ripen on the trees, just as nature perfects them, this good character cannot be obtained.

The Early Ohio Grape.—This grape, which has already been favorably noticed in Meehans' Monthly, was a chance seedling found in the vineyard of Mr. R. A. Hunt, of Euclid, Ohio, being one of twelve that was selected to be allowed to grow up to fruiting condition. Its comparative earliness is evidenced by its being ten days earlier than the well known Moore's Early. Early grapes of first-class quality are still desideratums, and this one, if it confirms by experience all that has been said of it, will certainly be a valuable addition to an already large list of varieties.

Dried Bananas.—A new thing under the sun seems to be the attempts of South Americans to dry bananas. "The Rural New Yorker" states that American evaporators are now getting to be quite common in Central and South America for drying these fruits, and that after drying the bananas are ground into meal and are used eventually for making bread, puddings, cakes, and other toothsome things.

BIOGRAPHY AND LITERATURE.

WASTED LIVES.

Yet oft a sigh prevails, and sorrow fall,
To see the hoard of human bliss so small;
And oft I wish, amidst the scene, to find
Some spot of real happiness consign'd,
Where my worn soul, each wandering hope at rest,
May gather bliss to see my fellows blest.
—Oliver Goldsmith.

Death of Ghiesbreght. — "The Natural Sciences are in mourning! The great Belgian botanist, Augustus B. Ghiesbreght died at San Cristobal Las Casas on the 7th of February last, at the age of 82 years and 11 months.

This great man, after his profitable studies begun in Brussels and finished in Paris; after the various honors which he received from the King Leopold I. for his valuable services given to science in his explorations of Brazil and made under commission of the same sovereign, in company with the illustrious Linden; after his repeated journeys in Mexico, which revealed to old Europe the beauties of the Mexican flora and fauna, came at last to fix his residence in the ancient capital of Chiapas, where he collected the multitude of precious plants which to-day enrich the herbaria of Europe. 'The botanical collections of Ghiesbreght are distributed among the Museums and Academies of Belgium, England, France, Switzerland, Germany and Russia. The number of new species sent to those herbaria or introduced to the gardens of those countries is immense.' *

Though the illustrious Belgian, in his scientific explorations, figures by the side of Linden, as a zoologist only, it appears that his favorite study was botany, since it was to that he devoted himself in Tobasco and Chiapas, from the moment he arrived upon their shores. Indeed, the monumental work of Hemsley, "Biologia Centrali-Americana," registers in almost all the orders of its plants, a multitude which were collected by the industrious *savant*, as well as many that have been dedicated to him, of which we may mention the following: *Lomaria Ghiesbreghtii*, Bkr.; *Polypodium* (*Goniopteris*) *Ghiesbreghtii*, Linden; *Philodendron Ghiesbreghtii*, Linden; *Quercus Ghiesbreghtii*, Martens; and the remarkable Scrophularaceous Tree, *Ghiesbreghtia grandiflora*, a new genus which the celebrated Dr. Asa Gray took occasion to name after its illustrious discoverer. The name of the studious Belgian is also borne by several species in the zoological kingdom, among which we record the bird of prey, *Urubitinga Ghiesbreghtii*, Du Bus, and the mollusks, *Glandina Ghiesbreghtii*, Pfeiffer; *Ampullaria Ghiesbreghtii*, Reeve; and *Helicina Ghiesbreghtii*, Pfeiffer.

In his visit to the Grotto of Cocona in the vicinity of Teapa, made July 16, 1890, our esteemed friend D. José N. Rovirosa, already cited, honored one of the chambers of that cave with the name of the illustrious Belgian explorer, as a new tribute of admiration to the merit of the man who has rendered such great service to the progress of the study of nature, not only by his great knowledge, but by his enthusiasm and persistence in dissection and herborization.

The great botanical labors of Ghiesbreght were not limited to the collection of dried classified plants, but what is more, he also sent large consignments to various points in Europe, of living plants, preserved by his skill and careful pains in glass cases, with the praiseworthy object of making the riches of the American Flora better known to the old continent.

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From his establishment in our State, about the year 1838 or 1839, this traveling naturalist did not cease for a moment to collect the rare plants of those which grow in such profusion in our fertile zone, whether on the coasts of the gulf, or the marshy interior of the territory, or along the cascades of the Sierra known to be most abundant in the rarities of American vegetation. Doubtless these wonderfully multiplied rarities encouraged the modest Ghiesbreght to fix his residence in the centre of that virgin and privileged region, the climate of which is exceptionally healthy, where the panoramas presented are so varied and peculiar, and where the perspective of the mountains displays such creative power. * * *

Nor was he a mere naturalist forgetful of his philanthropic and social duties, for the refining fire of patriotism kindled its flame in the breast of Ghiesbreght, for his biographer tells us that in 1830 he gave proof of his love for liberty, enlisting as a physician among the defensive forces of his country, when it was threatened, an action which the Belgian government rewarded with a diploma and a cross of honor.

The same courage was manifested under another very distinct aspect, every time that he exposed his precious life to make the conquest of a rare plant among the mountain clefts or the deep ravines. Nor was it at all extraordinary that the man who had exposed his breast to the cannon-shot in defence of his country, should have placed his feet upon the peaks of Colima, of Orizaba, of Jorullo, and of Cempoaltepec.

So also the merits of Jenner and of Monthyon shone upon the brow of this eminent naturalist, for we know that he liberally bestowed not merely the treasures of his medical knowledge, but also his slender savings upon the needy classes. 'For this reason says his biographer) the people of Chiapas are proud to retain him in their capital, to call him their compatriot, as those should be called who love the progress of the sciences in Mexico'—and for this reason we who love this progress lament his disappearance from earth, and from the bosom of science, but we console ourselves by remembering that he has exchanged the American skies for the skies of glory.

Felipe A. Margalli.

San Baptista de Tabasco, March 10, 1893.

[To the above communication it may be added that European journals often spell the name Ghiesbrecht.—Ed.]

ALPHONSE DE CANDOLLE.

De Candolle.—The death is announced at Geneva, Switzerland, on the 4th of April, of Prof. Alphonse de Candolle, whose name at the present time stands at the head of botanical knowledge everywhere. He was the son of another botanist quite as great, Augustin Pyramus de Candolle, originally Professor of botany at Montpellier, but subsequently at Geneva. He was born at Paris, on October the 27th, 1806. His early studies were in the direction of medicine, but he finally became assistant to his father, and afterwards successor in the Professorship of botany in the Institute at Geneva, and for eighteen years was Director of the Botanic Garden there. Although the author of a number of independent botanical works, possibly his greatest was the completion of the "Prodromus," which his father left unfinished in 1841. Notwithstanding his advanced years, the announcement of his death came with some surprise to his botanical colleagues in America, where he has been for many years held in the highest estimation. The cut used is from the London "Journal of Horticulture," the one in the writer's collection going back to younger days. Like all truly great men, he was beloved for his broad sympathies as for his learning. No true searcher for botanical truths, however humble, but found a friend in De Candolle.

The Garden of Eden. — The notice in Meehans' Monthly regarding a fanciful location of the Garden of Eden at the North Pole, brings for us a note from Miss Maria Pinckney, of Charleston, to the effect that the lady referred to is not alone in her glory, as Miss P. read some years ago a 500-page book, by a well known professor in a Northern college, whose name has escaped her, to prove the same point; and she remarks that if his arguments were not conclusive, the facts gathered and fitted together were certainly most wonderful.

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* José N. Rovirosa—Life and labors of the Belgian naturalist, Augustus B. Ghiesbreght, explorer of Mexico, La Naturaleza, 2nd series, Vol. I, p. 211.

GENERAL NOTES.

COMPLIMENTS TO THE MAGAZINE.—A little over forty years ago, the writer of this paragraph started with a bundle of manuscript under his arm, on a tour amongst book publishers. It was on "American Ornamental Trees." Only one gave even a reason for declining it. "If it were something like 'Uncle Tom's Cabin' we could make it go." But the author had more faith in the American love for solid reading than these publishers. He could not then afford to risk much, so he cut down the manuscript two-thirds, and then risked the little seventy-five cent book by a guarantee to the publishers who issued it!

He has had faith in American love of gardening. He was told that "something to eat" was the true basis for a horticultural magazine, and that unless it be shown that there was "money in the garden," it was useless to present gardening to the American mind. Yet for thirty years he kept prosperous a magazine the main effort of which was to show that gardening was for living souls as well as for mortal bodies.

He could not find a publisher for the second series of "Flowers and Ferns of the United States" without becoming a silent partner in the firm itself! and when that publisher died he spent vainly several years in looking for another.

Even when the younger members of the firm of Thomas Meehan & Sons undertook to take on themselves the burden of publication, it was a whisper among the knowing ones, "who will care for a work like that?"

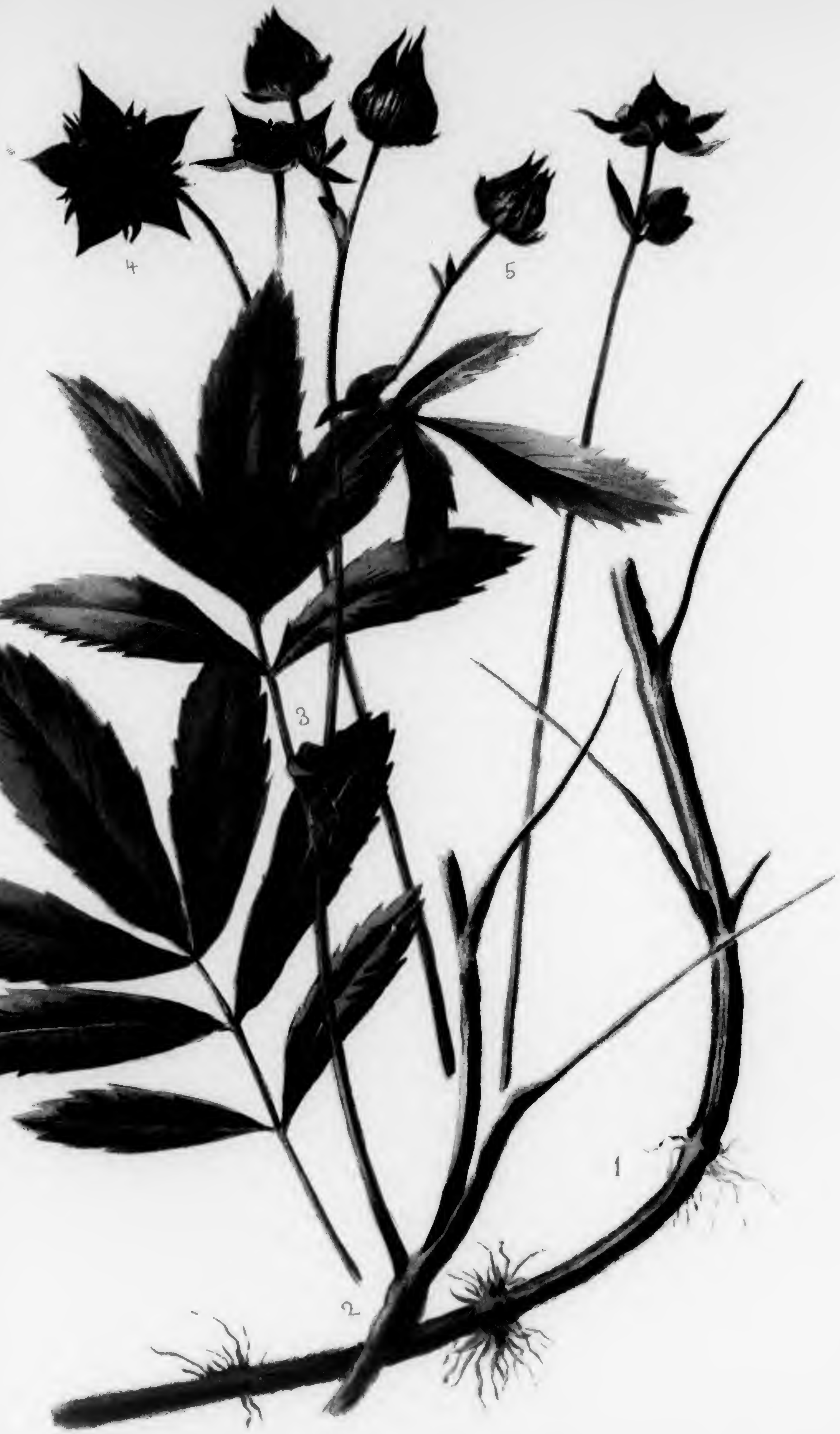
It would not be so difficult to find a publishers to-day. The complimentary letters from end to end of our great country, would show the grand mistake in regarding an American as but a slight remove from a Digger Indian. "I anxiously await the coming of each number," says Mr. Thomas E. Fahey, of Lenox in the Berkshire Hills,—and so say they all.

Not being publishers, and without the machinery to make the work known a regular publishing firm would have, much dependence has to be placed on the good will of friends in making the work known. In reply to some friends, whose inquiries have suggested this paragraph, it may be here noted, that a few full sets have been saved for those who come in at the later hour.

THE BEAUTIFUL PLATES.—The praises of MEEHANS' MONTHLY have been so continuous and are echoed from so many varied centres of intelligence, that it could not be supposed that these unsurpassed encomiums could be still surpassed. For the remarkably flattering manner in which the press of the country and numerous correspondents have expressed their pleasure at the plate of *Epigæa repens*—the Partridge berry—and of that number generally the conductors are proud. A substantial testimonial was the increase in the number of orders for the bound volumes from the beginning showing the growth of the feeling it is desired to encourage, that the work is not one of temporary concern, but will become a standard library book of reference for all time. A limited set of bound volumes can still be furnished.

STRANGE GRASS FROM ALGERIA. — It is stated in the newspapers that a peculiar grass has been discovered that will grow around the craters of the volcano of Oran, a seaport on the Mediterranean Sea. No other plant, it is said, can endure the temperature as this grass can. It is reported to be in quantities sufficient for profitable export, and large quantities are being used as tying material. No information is given, however, as to what species of grass this may be.

THE NEXT PLATE.—Having given our botanical friends a rich feast in a rare fern, the real flower lover, pure and simple, shall next be ministered to, and *Comarum palustre*, a beautiful purple flowered native of the Northeast will be illustrated.



COMARUM PALUSTRE.

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MARSH CINQUEFOIL.

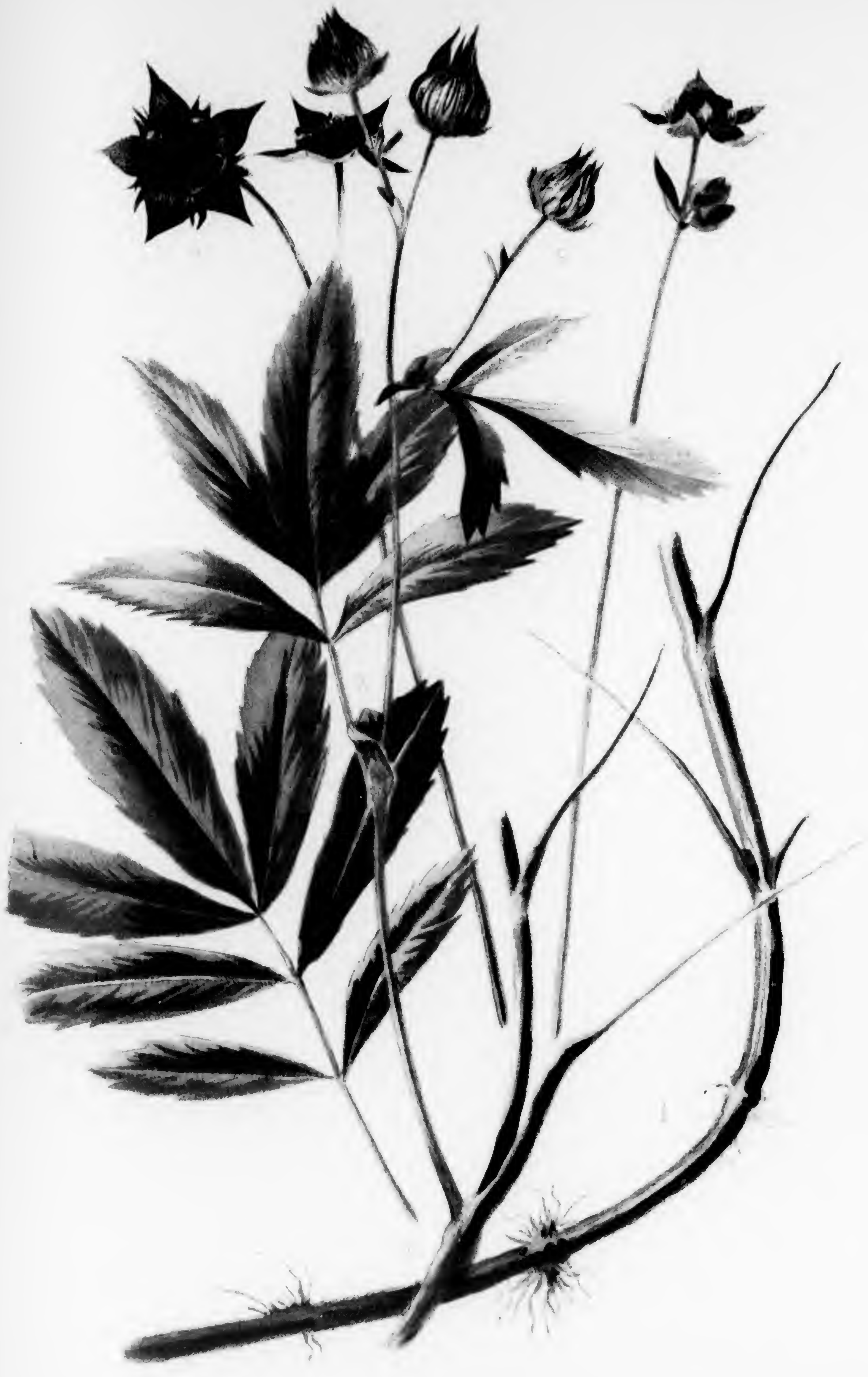
NATURAL ORDER, ROSACEÆ.

COMARUM PALUSTRE, LINNÆUS.—Stems creeping at the base, one to two feet high, nearly smooth, branching; leaflets three, five, or seven, crowded, one and a half to two and a half inches long and half as wide; oblong-lanceolate, hoary beneath, obtuse, sharply serrate, subsessile; petiole longer than the scarious, woolly, adnate stipules at the base; flowers large; calyx segments several times larger than the petals; petals about three lines long, ovate-lanceolate, and with the stamens, styles, and upper surface of the sepals, dark purple; fruit permanent. (Wood's *Class-Book of Botany*. See also Torrey and Gray's *Flora of North America*, and Gray's *Manual of the Botany of the Northern United States* under the name of *Potentilla palustris*).

The interesting wild flower here illustrated affords us some valuable lessons in botany as a science, and in botanical history.

Few of our modern names for plants can be traced back more than three or four hundred years, as beyond that we have few works extant except those which were written by the learned men of ancient Greece and Rome. Still there were in all the intervening ages some who studied plants more or less intelligently in the little light vouchsafed to them, and the names given to plants in these times have been handed down to us, but often with little knowledge as to why they were so named, or any clue to their meaning. Our present plant being common to the north of Europe as well as to northern America, and with some fame as a medicinal plant, must have attracted attention even in early times, when it was probably associated with *Potentilla*, under which name the common *Potentilla anserina* of our modern system, has been known for many ages. With the revival of learning which followed the dark ages, botany came in for a share of attention, and attempts were made at classifying plants in some natural way. Bauhin in 1671 separated plants allied to the one we are now discussing, and made the genus *Quinquefolium*, because, he says, of the number of leaves they have, and our plant became *Quinquefolium palustre rubrum*. So little was known of the real structure of plants at that time, that often the appearances of the leaves decided the genus, and we might expect to find even an *Ampelopsis* in the same genus with the Strawberry, simply because both had five leaflets. Before Bauhin's time Gesner had established a genus *Pentaphyllum*, in which was our plant; and Rudbeck, the predecessor of Linnæus, re-established it, and our plant became *Pentaphyllum aquaticum*.

Tournefort who wrote about the beginning of the last century, and whose views of the structure and affinities of plants were so correct that many of his views were adopted by Linnæus, and continue to this day, made a new genus for our plant, and it became *Pentaphylloides palustre rubrum*. Linnæus, following, again gave it a new place, and called it *Comarum*, thus removing it from the true *Cinquefoils*, among which in some form or another it had so long appeared. This was in the *Flora Lapponica*, or Flora of Lapland, in 1737. Thus it remained till 1772, when Scopoli, in the Flora *Carniolica*, or Flora of the Italian Alps, took it back to its old relations, and made it *Potentilla palustris*. This however did not seem to meet with general approval. So recently as 1838, our own great botanists, Torrey and Gray, in the Flora of North America, followed Linnæus in regarding it as *Comarum palustre*, but in his more recent writings Dr. Gray has followed Scopoli in regarding it as a mere *Potentilla*. As there have been no new facts discovered in relation to our plant and its immediate connections than were known to Linnæus, it shows that genera in botanical systems are more or less artificial, and that there is nothing absolutely definite in the botanical mind as to what should constitute a generic character. It may be here remarked that in establishing genera of the plants allied to the one under present consideration, Linnæus looked to the behavior of the receptacle for the best distinguishing character. In the Raspberry, for instance, the fleshy matter covers the seeds, and when mature falls from the



INTENTIONAL SECOND EXPOSURE

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The origin of the name *Comarum* cannot be certainly traced. Johnson says it is from the Greek *Komaros*, the *Arbutus Unedo*,—or Strawberry tree,—because the fruit is like that,—but there is no suggestive resemblance between these fruits. Prof. Wood says, from *Komaros*, the Strawberry tree, which the "plant" resembles, but here again there is no resemblance. Linnæus who named the genus merely tells us he found the name in Apuleius, and adopted it for this genus. This Apuleius was a distinguished Athenian scholar, who flourished in the second century of the Christian era, and emigrated to Rome. Here he was smitten by the charms of an exceedingly rich widow named Pudentilla, whom he married; but under such a storm of jealous envy, that he set to work to defend himself in writings so able, that it was chiefly through these that he became famous. It is remarkable that there has seemed no adequate reason for the name *Potentilla*. Dr. Gray remarks in his "Manual," "name a kind of diminutive from *potens*, powerful, alluding to the reputed medical power, of which in fact these plants possess very little." Bauhin and Linnæus merely say that the name is derived from its power over men—using the word *vir*—or man in the masculine sense; and as he had Apuleius in mind when he separated *Comarum* from it, his explanation of *Potentilla* is strongly suggestive of the power of Pudentilla over the celebrated writer. One might be scarcely pardoned for suggesting this fancy, if it were not that writers in the past ages were not as particular in repeating as accurately as the present era demands. For instance, in respect to this very plant, Dr. Withering in his "Arrangement of British Plants" in 1830 wrote, "The root dyes a dirty red. The Irish rub their milking pails with it to make the milk appear richer and thicker." Miss Pratt in her "English Wild Flowers" says, "It is called Cowberry in some parts of England, probably from a practice common among the Irish of rubbing the inside of their milk pails with this plant." Dr. Prior does not include "Cowberry" at all among his "Popular Names of British Plants," and we may see some tendency to vary from the original statement of Dr. Withering. In the "Treasury of Botany," 1874, Rev. C. H. Johns writes, "The roots dye a dirty red. In some parts of Scotland the fruits are called Cowberries on account of their being used to rub the inside of milk pails for the purpose of thickening milk." It is by no means clear that Dr. Withering was not speaking of the root only; but Miss Pratt varies it to the "plant," and makes the "English" call it Cowberry because the "Irish" use it, while the Reverend Mr. Johns carries the practice to "Scotland" and limits the use to the "fruit."

The original *Potentilla*, *P. anserina*, was very famous in old times for its medical properties. There was scarcely any disease it was not employed in. It was not merely *Potentilla*, "little" power, but a great power over the troubles of both men and women—in agues, wounds, and sores of every description. Griffiths in his "Medical Botany" regards it as having some real astringent qualities, and so far useful.

The plant has had many common names suggested for it. Dr. Gray uses "Marsh five-finger." But as it seems desirable that only one should come into general use, Marsh cinquefoil is employed here as the oldest, and the one which seems to be in the most general use in the old world.

It is confined to the northern parts of the United States, extending to the Arctic Circle. Our illustration is from a Massachusetts specimen.

EXPLANATION OF THE PLATE.—1. Creeping root stock. 2. Portion of a branch, showing seven, five, and three leaflets to one leaf on the same plant. 3. United stipule. 4. Flower, showing proportion in size of petals to the colored sepals. 5. Showing bracts at base of calyx, also seen in Fig. 4.

WILD FLOWERS AND NATURE.

FORETELLING THE WEATHER.

But, more than all, the setting sun survey,
When down the steep of heaven he drives the day:
For oft we find him finishing his race,
With various colors erring on his face.
If fiery red his glowing globe descends,
Highwinds and fiery tempests he portends:
But, if his cheeks are swoln with livid blue,
He bodes wet weather by his watery hue;
If dusky spots are varied on his brow,
And, streaked with red, a troubled color show;
That sullen mixture shall at once declare,
Winds, rain, and storms, and elemental war.
But, if with purple rays he brings the light,
And a pure heaven resigns to quiet night,
No rising winds or falling skies are nigh,—
But northern breezes through the forests fly,
And drive the rack and purge the ruffled sky.

DRYDEN'S VIRGIL.

HONEY MAKING.—Nectar in flowers is not honey. This nectar is gathered by the tongue of the bee, and enters what is called the honey bag, from which it is regurgitated by the bee on its return to the hive, and deposited in the honey cell. Even then it is thin and watery, and does not become really honey until the watery parts have evaporated. In collecting the sweets the bees do not confine themselves wholly to flowers. The writer of this paragraph has for a next neighbor a professional bee keeper, whose bees depend almost wholly on the flowers from the writer's garden—that is to say, there are few other flowers, except wild ones, on which the bees can collect their material. Unfortunately for him they are not satisfied with the flower, but also carry away the fruit. It is almost impossible in raspberry time to get enough from his garden to make a respectable dish for the tea table—nearly every berry is sucked to pieces before it is absolutely ripe. It is the same with the grape; in order to secure them from the ravages of the bees they have to be protected by paper bags. Last season, and for the first time, they have been found to carry away peaches also. How they first penetrate the skin is not clear; but it may possibly have been from the puncture of the curculio. The curculio frequently cuts the skin without depositing the egg, and this single break may be borne along without injury to the peach, permitting it to ripen. It is possible that they get a first entrance here. At any rate certain it is that before the peach is fairly ripe little is left on the peach but the stone. Other fruit growers likewise complain of the ravages of bees. Bee keepers contend that this cannot be so—that the bee is incapable of perforating fruit. This may or may not be—certainly what perforations might exist before the bees discovered them would not injure the fruit—the following up of this by the bees is just as bad as if they made the original perforations for themselves.

THE SNOW PLANT.—The full history of the growth of the Snow Plant of the Nevadas, *Sarcodes sanguinea*, has not yet been fully ascertained. A remarkably observant correspondent, Mrs. Ross Lewers, of Washoe Co., Nevada, finds that the plants are pushing up from the ground by the 1st of October,—all ready, as a Hyacinth would be, to push up its flowers as soon as the spring opens. This shows that the whole of their growth must be made the year before the flowers appear, and this fact has not before been recorded, and helps considerably with its history. A very large mass of coralline appearance, is formed before the flowering stage is reached, and it is hardly likely that from the time the seed matures in the fall, the whole of this mass is formed before October. It all goes to show that the plant may possibly take more than one year to perfect itself.

BEGGAR WEED. — It is very hard to keep up with the common names of plants, as they are changing from year to year, if not oftener. But it is important to watch the drift of things in this line. It appears that *Richardsonia scabra* is known in the South as "Beggar weed." It is an immigrant from Mexico, and is becoming a well known weed in the South.

YUCCA FILAMENTOSA. — Although pictures of the pretty Yucca, familiarly known as Adam's Needle, are not at all unfrequent, rarely is seen anything so pretty as the plant here illustrated, and which was grown in the garden of Mrs. Cornelia Boecklin, of Burlington, Iowa. This particular species of Yucca is probably the easiest to cultivate of all, and it is now getting a very wide distribution in pleasure grounds. It is an extremely interesting plant outside of its mere beauty. Through the labors of Prof. Riley and the late Dr. Engelmann, it was made known some years ago that a particular night moth, which Prof. Riley named *Pronuba*, is always associated with the plant in order to its fruitfulness. No seed is ever produced where this moth is absent ; wherever it visits the flowers, seed usually follow in abundance. Dr. Englemann noted that the pistil in this plant was deep down in an orifice at the apex of the style ; and Prof. Riley found that the insect brought the pollen and thrust it into this orifice. It seemed almost instinctive on the part of the insect which deposited its egg in the immature seed vessel, that it was necessary that the flowers should be fertilized, in order that the fruit might come to perfection, and thus afford food for the larvæ. Possibly no more wonderful discovery of the relation between plants and insects was ever made. There have been different views as to the physiological value to the plant of this work of the insect ; but no difference of opinion as to the great honor due to those eminent observers for our knowledge of the interesting facts.

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FORESTRY.—While this paragraph is being written thousands of acres of valuable timber is under fire in New Jersey, and reports of similar forest conflagrations are in every newspaper. It is remarkable that those who are interested in the forest interests of our country do not see that the great obstacle is the existence of underbrush. With no underbrush there could be no forest fires. It is the dead wood and accumulation of leaves, and dead material which is encouraged by underbrush, that feed the fire. Although leaves may burn underneath forest trees, where there is no brush, the bark is a sufficient protection, and trees never suffer from these light burnings. The whole subject of forestry has been made too much a question of meteorology and meteorological influences so far as leading to springs and streams ; but the practical man who wants money from forests will not plant merely for the sake of public interest, and until we can show him that there is money in the planting, very little is likely to be done. Until he feels sure that he is secure against a forest fire, he is not likely to invest much. The great campaign in the interest of forestry should be against the existence of underbrush, as much as for the preservation of old trees.

CYPRESS KNEES.—In the Southern swamps, the deciduous cypress sends up curious knobs, called Cypress Knees, the object or purpose of which is a subject of discussion in some quarters. It has been said they never behave in this way except when growing in wet places. Mr. Burnet Landreth, at Bristol, Pa., having some trees, informs us that two of his trees are growing on the edge of a swamp, and one on the high and dry ground. They all throw up knees as well on the dry as on the wet situation.

CITRUS TRIFOLIATA.—Mr. W. Saunders, of United States Department of Agriculture, contributes the following note on this valuable introduction :

In the Spring of 1869, the Department of Agriculture received an invoice of orange trees from Japan. In crossing the Rocky mountains they encountered severe weather, and reached here a solid mass of ice.

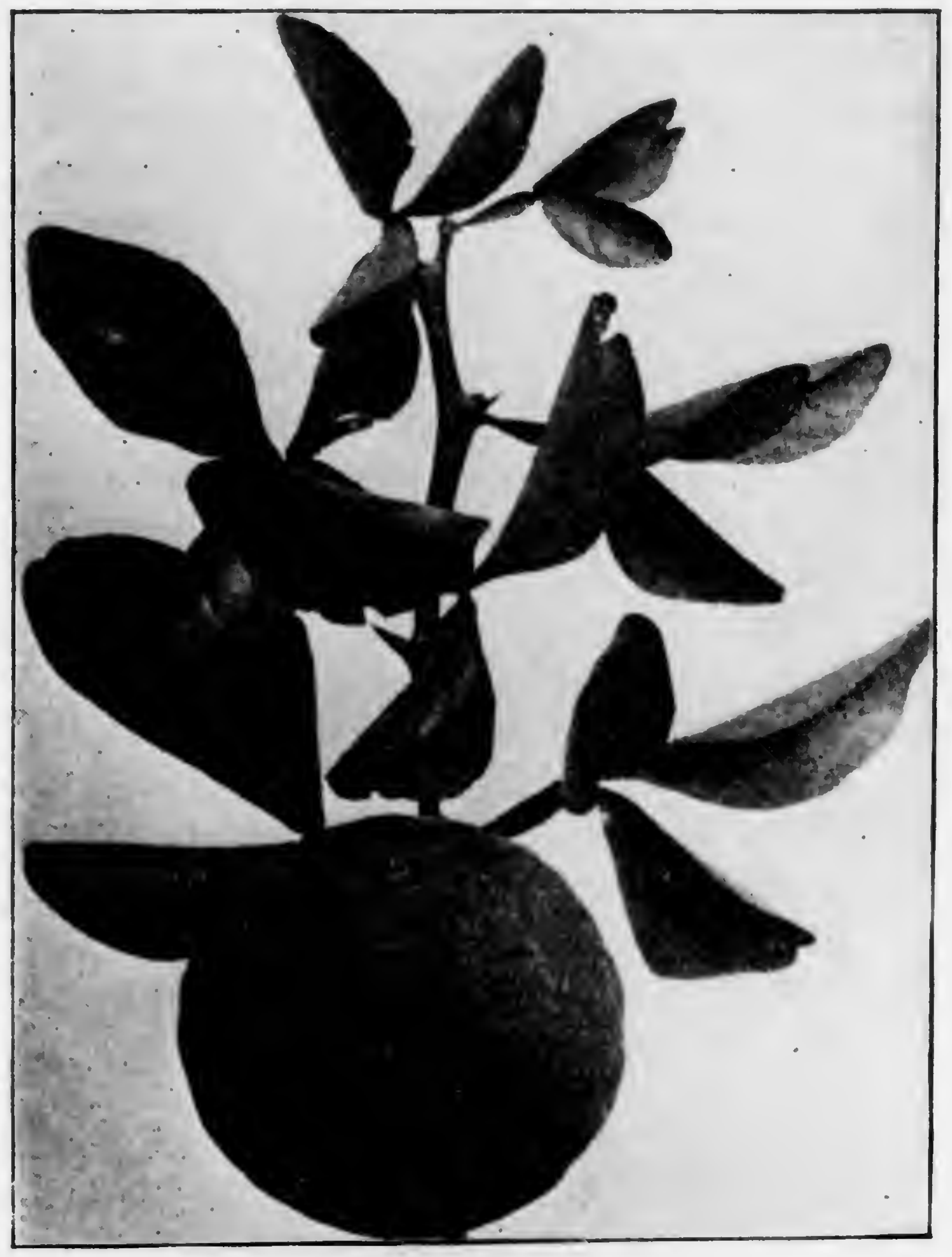
They looked bad. After unpacking them they were placed under a greenhouse staging where they would recuperate if any life was left in them. Very few of the tops recovered, but the stocks upon which they had been worked budded forth in profusion. These growths puzzled us for some time, they did not show much externally to class them with the Citrus family. After a time a drawing and description of the plant was found in an old botanical work, where it was named *Citrus trifoliata. Linn.*

Supposing that this might prove to be a superior stock for oranges, an order was sent to Japan for a quantity of seed. This order was duly fulfilled and from it several thousands of plants were produced, and for several years these were used as stocks for budding oranges of different varieties. It was evident that this stock dwarfed the orange, the trees making but little growth, and it was abandoned, with one exception.

Citrus Japonica, the Kum-quat of China, a small orange much used by the Chinese for preserves, thrives best when budded on this stock, indeed, it is difficult to grow it upon any other.

Some plants of *Citrus trifoliata* having been planted in the shrubbery border, proved them to be perfectly hardy in this climate, and their growth indicated a remarkable adaptability as a hedge plant. For the purpose of introducing it as such, further orders were placed for seed from which many plants have been produced and distributed for trial as a hedge plant. In climates where it will stand, I do not know of a more formidable plant for strong hedges for live stock inclosures.

HEDGES FOR SHADY PLACES.—It is often desirable to have hedges along lines where large trees are already growing. Evergreens are wholly unfitted for these situations ; only deciduous shrubs can be employed. Among the best of these are the various varieties of Privet. They stand dry ground better than almost anything else. It is not so much the shade which injures the hedges in these situations as it is the drying of the ground by the roots of the trees. When we imagine the enormous amount of moisture transpiring from thousands of leaves of trees, we can readily see how dry the ground must be which has to supply this moisture. But those who have practical experience understand this without even a thought of the philosophy involved.



CITRUS TRIFOLIATA.

ROBINIA HISPIDA. — A correspondent from Rutherford County, N. C., states that *Robinia hispida*, the rose-colored Acacia, is quite abundant in that locality. It is a very easy plant to raise in nurseries, and is usually found in all good collections. But the chief interest connected with it is in its supposed inability to perfect its own seed. Those who have the opportunity would do good service to botanical science by watching for seed vessels. No botanist seems ever to have seen any. A few seed vessels would be very valuable to botanical collectors.

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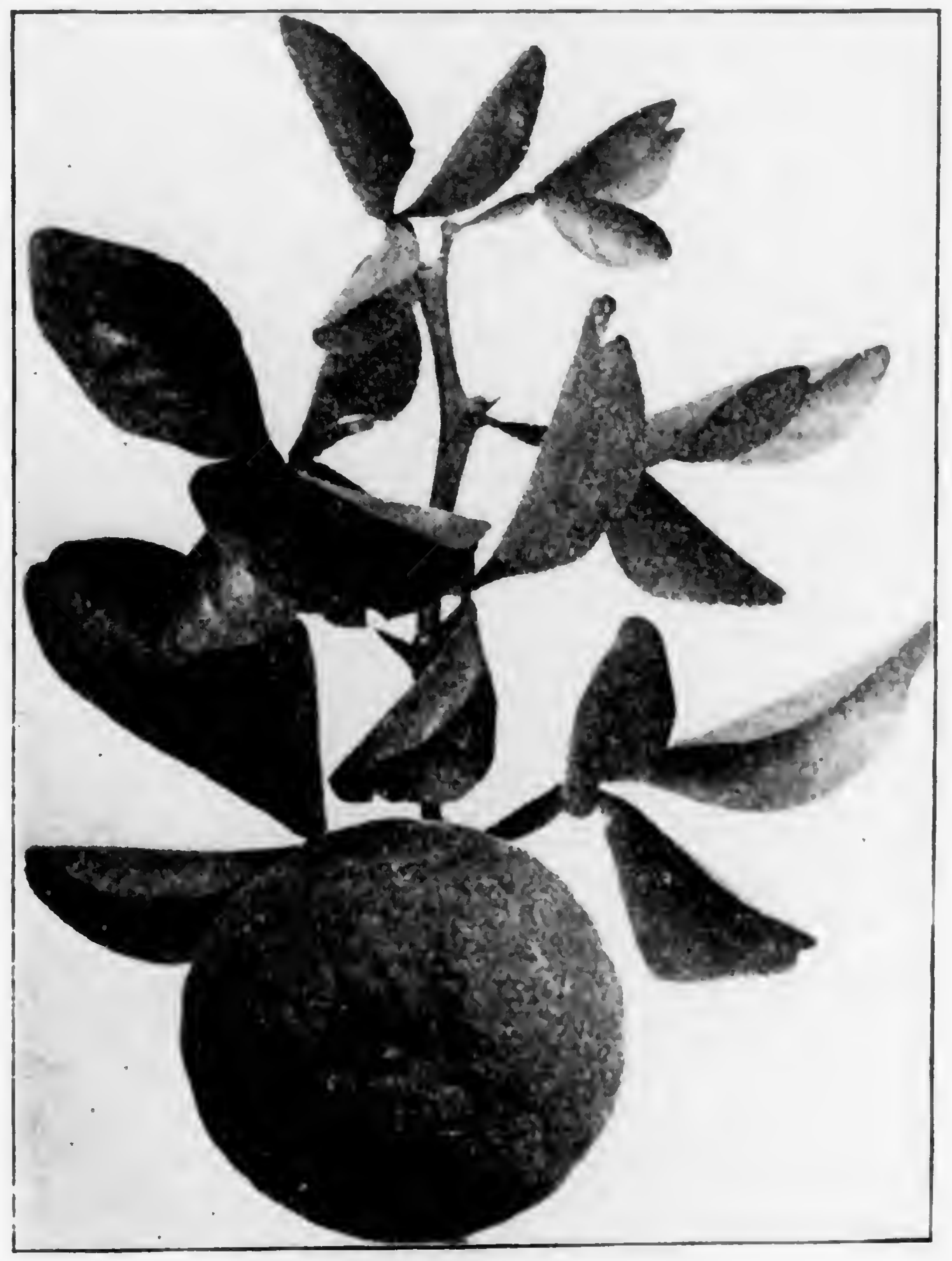
HEDGES FOR SHADY PLACES. — It is often desirable to have hedges along lines where large trees are already growing. Evergreens are wholly unfitted for these situations; only deciduous shrubs can be employed. Among the best of these are the various varieties of Privet. They stand dry ground better than almost anything else. It is not so much the shade which injures the hedges in these situations as it is the drying of the ground by the roots of the trees. When we imagine the enormous amount of moisture transpiring from thousands of leaves of trees, we can readily see how dry the ground must be which has to supply this moisture. But those who have practical experience understand this without even a thought of the philosophy involved.



CITRUS TRIFOLIATA.

ROBINIA HISPIDA. — A correspondent from Rutherford County, N. C., states that *Robinia hispida*, the rose-colored Acacia, is quite abundant in that locality. It is a very easy plant to raise in nurseries, and is usually found in all good collections. But the chief interest connected with it is in its supposed inability to perfect its own seed. Those who have the opportunity would do good service to botanical science by watching for seed vessels. No botanist seems ever to have seen any. A few seed vessels would be very valuable to botanical collectors.

INTENTIONAL SECOND EXPOSURE

THE OSAGE ORANGE. — VALUE OF SCIENTIFIC FACTS. — The question is often asked,—what is the practical use of abstract science? The answer generally is, that a new thought, or a new fact is like a new born babe, of no particular use at that time. We have to wait and see whether the new fact or the new babe is of any practical use in the world. A good illustration of this is connected with the history of the Osage Orange. The great journey across the continent projected by Lewis and Clark, had for its object the collection of objects of natural history as much as of the general facts in physical science. No one could tell before they started whether anything discovered could be made of practical use. This expedition was planned in the house of Bernard McMahon, an Irish exile and gentleman of means in his own country, but who had to sustain himself as a seedsman and florist in Philadelphia. His great intelligence drew around him many learned and active spirits, and it is more than probable that it was he who suggested to Jefferson, who frequently visited him at his home, the exploration which Lewis and Clark afterwards made. The herbarium of dried plants which these explorers made, was given to McMahon, as also were the seeds which they collected. Among others were a few Osage Orange seeds, and the plants raised from these seeds were still standing until about two years ago, when both the trees and the house were destroyed, in order to make car sidings for the Reading Railroad Company. The few Osage Orange trees were simply looked upon as curiosities, and probably, if seeds could have been sold at that time, a few cents a package would have been considered their full value. But it came about that the Osage Orange proved to be one of the best hedge plants that had ever been introduced,—to say nothing of the famous Hawthorn of the old world. When this became evident, our enterprising western nurserymen took hold of it in earnest, and with much earnestness,—and the present eminent forest planter and nurseryman, Robert Douglass, gave as much as $50 for a bushel of the seed, when now the seeds can be had for nearly the asking in many localities. When we remember how little was known of the value of this tree when Lewis and Clark first gave McMahon a few seeds, who would ever have supposed that they would reach such value that a nurseryman eagerly would pay as much as this a bushel for them? And so it is. Science must go on pursuing its thankless course. It is only after it has gained the facts that we can possibly tell of what value they are to mankind.

THE UNION OF PARTS. — Of late years a branch of botany, known as morphology, has advanced so as to be one of the most useful, as well as fascinating, of the many divisions into which botany is now divided. The conception is that all parts of plants are leaf blade modified. It has been stated, for instance, that a peach fruit is nothing more than a bundle of modified leaves. Of course they never were leaves, except in the sense of a formation, so early, that even the microscope could not perceive them. We know this only by results. Accidental occurrences give the confirmation to these truths. The honeysuckle sometimes has the leaves so completely united that the stem seems to have been forced through the centre of one single leaf; but lower down on the stem, it can be seen that the two leaves are entirely separate and that the seemingly separated leaf above must have been united in the very early stage. This happens as a regular thing with the honeysuckle, but we see similar things occasionally in other plants. With this is an illustration of a leaf of *Magnolia Kobus*, a comparatively rare Japanese species, in which the edges of the lower portion of the leaf have become united so that the leaf has the form and appearance of a Calla spathe. As a principle it may be said that there is no reason why what a plant does in one leaf it might not do in all, providing the forces which influenced the change in one leaf should prevail throughout the whole; and hence it would not be impossible to have a Magnolia in which every leaf would have the characteristics represented in the picture. At one time these monstrosities were simply looked upon as something curious, and that was all. In these days they are made to teach valuable lessons, which could not be taught in any other way.

Unfortunately the illustration referred to in the above text was not ready when the printer called to his feast, and shows that Burns might have included editors among those with whom things, "gang aft aglee." It will appear in next issue.

GENERAL GARDENING.

A BEAUTIFUL GARDEN.

——Thus was this place
A happy rural seat of various view,—
Groves whose rich trees wept odorous gums
and balm;
Others whose fruit, burnished with golden
rind,
Hung amiable, Hesperian fables true,
If true, here only, and of delicious taste:
Betwixt them lawns, or level downs, and
flocks
Grazing the tender herb, were interposed;
Or palmy hillock or the flowery lap
Of some irriguous valley spread her store,
Flowers of all hue, and without thorn the
rose. MILTON.

THE HOLLY.—In a cemetery lot at Woodlands, near Philadelphia, known as the Drexel Mausoleum, there is a magnificent specimen of the English Holly, which has been there a number of years. Occasionally other fine specimens are seen in this part of the world. There are also very fine ones in some of the parks at Washington. It is very rarely planted from a belief that it is too tender for this latitude; but this seems to be only the case where it is planted in open, sunny places. Where it has a little shade from the sun in summer and protection from severe wintry blasts, it seems to thrive very well. One remarkable point about it is, that thus isolated they rarely fruit, if indeed they ever produce the beautiful red berries for which the Holly in the old world is celebrated. Miller, the well known English botanist of the last age, contended that the plant was absolutely diœcious, and consequently isolated plants could not bear fruit. We do not believe this is accepted by modern English botanists, because they see the Holly bearing everywhere; but it is more than probable that it is really so diœcious that the fact that it bears berries so freely in the old world is due to the conveying of the pollen everywhere by wind, bees or other insects. The beautiful green of the foliage, however, and its famous historical associations would render the Holly worthy of cultivation everywhere though a red berry was never seen.

THE ORIENTAL SPRUCE. — The "Rural New Yorker" makes a point that among all evergreen trees on the Rural grounds, nothing is more valued than the Oriental Spruce. A feature of this tree, it states, is not half appreciated, namely, its beautiful, little, scarlet cones that resemble strawberries in shape and color. Endorsing this good character of the editor of the "Rural New Yorker," it might be added that an extremely beautiful feature is the young shoots when they are first issuing from their scaly buds. The old foliage of the tree is of the darkest possible green, while the light shade of the newly growing shoots makes one of the most beautiful contrasts to be seen in evergreen trees. They are so numerous too as to have quite an effect. On the end of one single branch, the writer of this counted no less than fifty-six growing buds. As the "Rural New Yorker" says, it also thrives where even the Norway Spruce will sometimes fail. Among the few botanical specimens brought by the one survivor of the unfortunate De Long expedition to the Arctics, Lieut. Melville, was a specimen of this tree, gathered in the Asiatic seas near the mouth of the Lena River.

IMPROVEMENTS IN GLADIOLUS.—In the last issue of MEEHANS' MONTHLY notice was made of the great improvements in the Gladiolus in the old world, by which some new races of great interest had been introduced. Our California experimenter, Mr. Luther Burbank, has been working in the same line, and, by six or seven generations of selections from various hybrids, he has produced a race which may well be termed the California strain. Some of these, by those who have seen them, are said to be extremely beautiful. Many of them growing all around the spike like a hyacinth instead of being on one side of the stem as usually seen, and some of them are as double as the hyacinths are. It is said to be a strikingly beautiful and distinct race.

Destroying Poison Vines and Other Weeds.—A number of correspondents inquire how to destroy poison vines and other noxious weeds. Nothing is more easy. No tree can live without leaves. When the young leaves push out in the spring, they take from the roots and woody trunks, if they have any, whatever food has been stored up in the winter, and the plants are in practically an exhausted state. If, at this time, the plants are cut off near the junction of root and stem, they will probably not push out again, but occasionally some few will,—a little nutrition being left in the roots. But if the plants are watched and again cut, should any leaves appear the second time, they will not push out again. Any one may readily try this experiment for himself by cutting down a tree—large or small makes no difference — just after the leaves have pushed. Some sprouts will occasionally come out from the stem after this. If they do, and these sprouts are taken off soon after they appear, they will not push out the second time, — the trees die absolutely. This knowledge is of great value in the case of cutting down trees where yards are paved, and it may not be desirable to take up the pavement to grub out the roots. If cut to the ground and the sprouts taken off, as described, the tree will die, and the portion of the trunk left beneath the ground soon rots and decays.

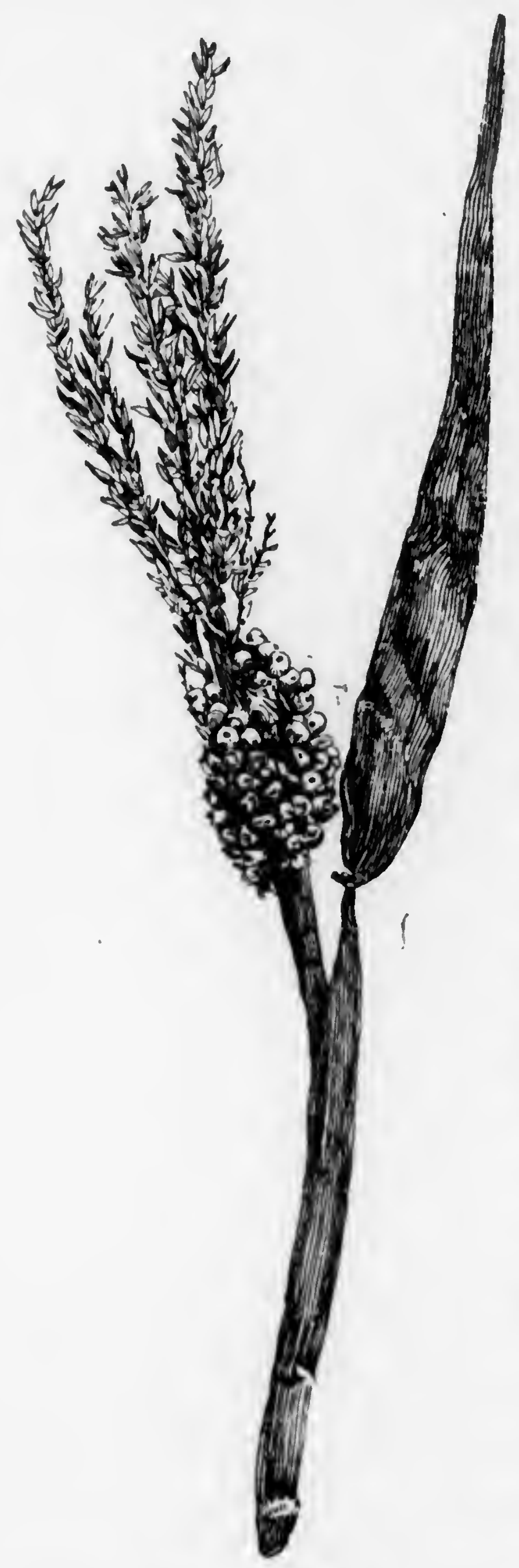


FIG. 2.--P. 105.

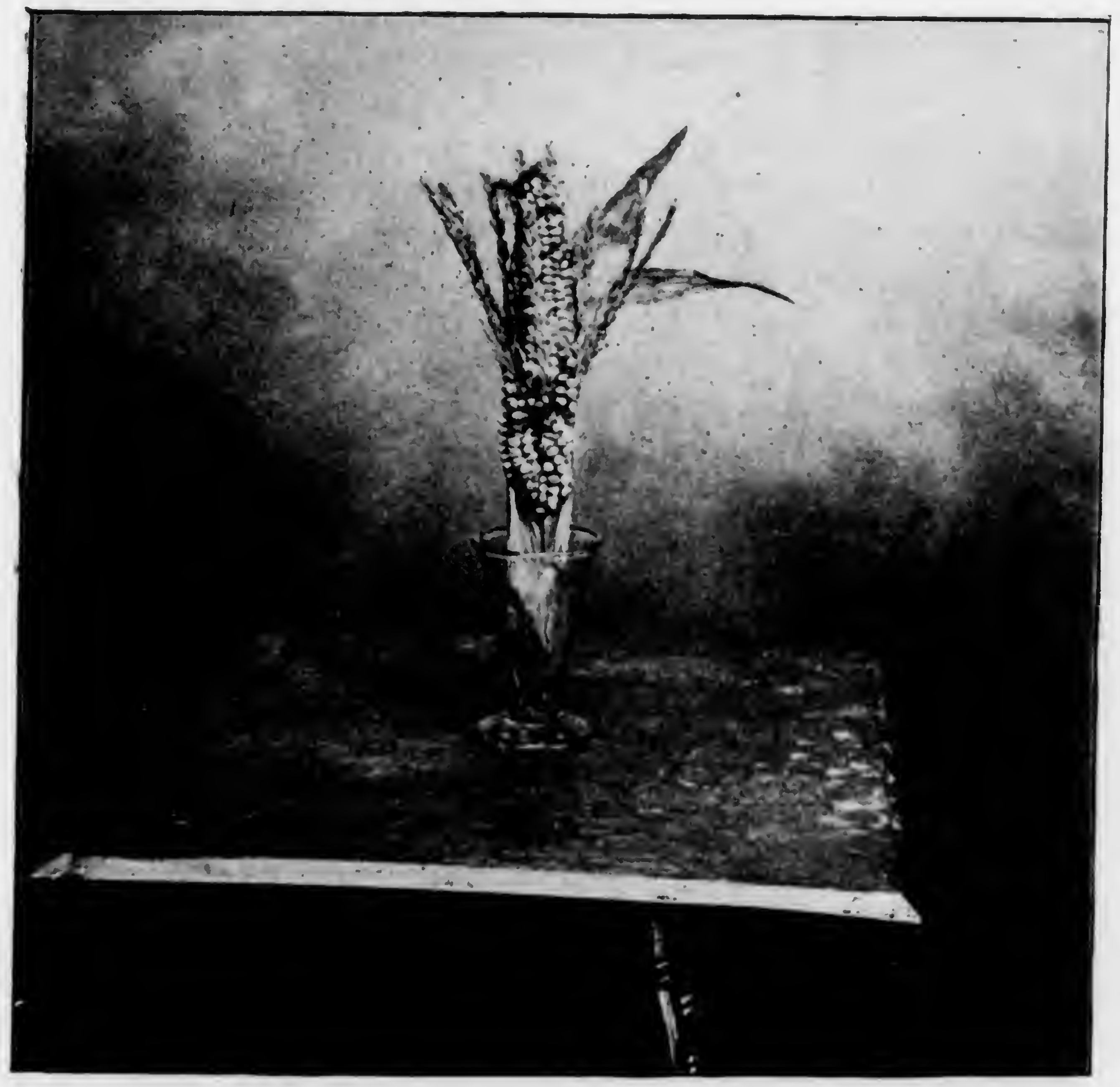
Truffles. — A number of inquiries come about the Morel, on which a chapter recently appeared. It might be observed, that the various kinds of puff balls are almost as good and to some tastes much better than the ordinary mushroom or Morel. They are taken when quite young and fresh, and cut up into slices like egg plants. Fried, these are particularly good,—but there is one kind of puff ball, called a Truffle, which grows wholly under the ground. These are collected by dogs which are trained to tell by the scent where they lie hidden. As recently stated in Meehans' Monthly, it is believed that the Truffle has occasionally appeared in America, — but there is no authentic record of any places where they were found. They are usually collected in the vicinity of oak forests in the old world,—and it is said that they are seldom found in the same place two years successively. So far as known all experiments to cultivate them have been failures.

Funkia and Hemerocallis.—This is one of the most satisfactory of any class of herbaceous plants for growing under the shade of trees. They have a praiseworthy habit of taking care of themselves. Once planted they endure till the end of time. Besides their striking leaves, the flowers of many of them are as pretty as lilies. Indeed the common name of Day-Lily, is very expressive.

Potato Stem Borer. — In the Eastern States there was trouble for many years with a small stem borer in the potato, which destroyed the plant before the potatoes were more than half grown ; after which, of course, the tubers ceased to grow, and the crop was very small. The larvæ of the borers remain in the stem some considerable time before they go out to finish their transformation in the earth ; and in consequence of this habit, it was very easy to destroy the whole crop by pulling up the stalks as soon as they would fade, and burning them. In consequence of this practice, the borer has not been very destructive to the potato crops in the East during the past few years. During the past five or six years, a similar trouble has been found in the West, that we would suppose to be caused by the same insect ; but Prof. Popenoe, of the Agricultural College of Manhattan, Kansas, in which state the injury has been particularly destructive the last five or six years, states that it is the work of another species, known as *Gortyna nitela*. It does not

confine itself there to the potato, but he says that it attacks cockleburs, corn, and tomatoes as well ; still it would seem that the same practice of pulling up and burning the stalks early in the season would be an effectual way of ridding Kansas of this destructive pest.

Sexual Flowers in Indian Corn.—An extremely interesting lesson in vegetable morphology may be derived from the study of Indian corn. If we take what is known as an "eight rowed" ear of corn, we can often see that it is made up of four pieces, the seeds being arranged on either side of each piece. If these four pieces were separate but joined at the base, and then drawn up through the hand so that the four pieces were to unite by their backs, and then these pieces were to become a little succulent and adhere, we should have precisely the ear of corn. Now if we take what is known as the tassel of the Indian corn, we see that it is usually made up of four pieces, just as in this theoretical conception, with a row of staminate flowers at the edges of each piece ; and if they were drawn up through the hand so as to touch back by back, and then become succulent, we should equally have the ear of corn but with male flowers. In other words, the method of forming the ear of corn and the tassel is precisely the same, and we can see that one can be formed out of the other if only there were less power of adhesion in the ear of corn, and a greater power of cohesion in the tassel. Just what is the power that induces cohesion and succulency in the one case, or the lack of it in the other, is the one thing that has not yet been ascertained. It is however a great gain to see the method by which nature forms the different sexes of flowers, although we may not be able to understand the exact details of these methods. The conditions however required, must be very nice, for we frequently find grains of corn among the tassels instead of barren flowers ; on the other hand, we frequently find barren flowers coming out of the ear of corn, just as if nature was uncertain in either case whether to make the barren or the fertile flowers. Herewith are illustrations, (see page 104, fig. 2) of these cases. In the one case an ear of corn has taken on a considerable amount of the characteristic of the barren tassel, with its male flowers ; while in the other case, a very large number of the male flowers of the tassel have become fertile and produced grains. Some seasons are more prolific in these changes than others. Illustrations in these seasons may often be seen,—at other seasons these abnormal results are rarely to be found. This would tend to show that the power underlying the whole is in some way or another connected with nutrition. We say as a general principle, that various phases of nutrition decide whether the flower should be barren or fertile, without being able to state exactly in what manner these phases of nutrition act.



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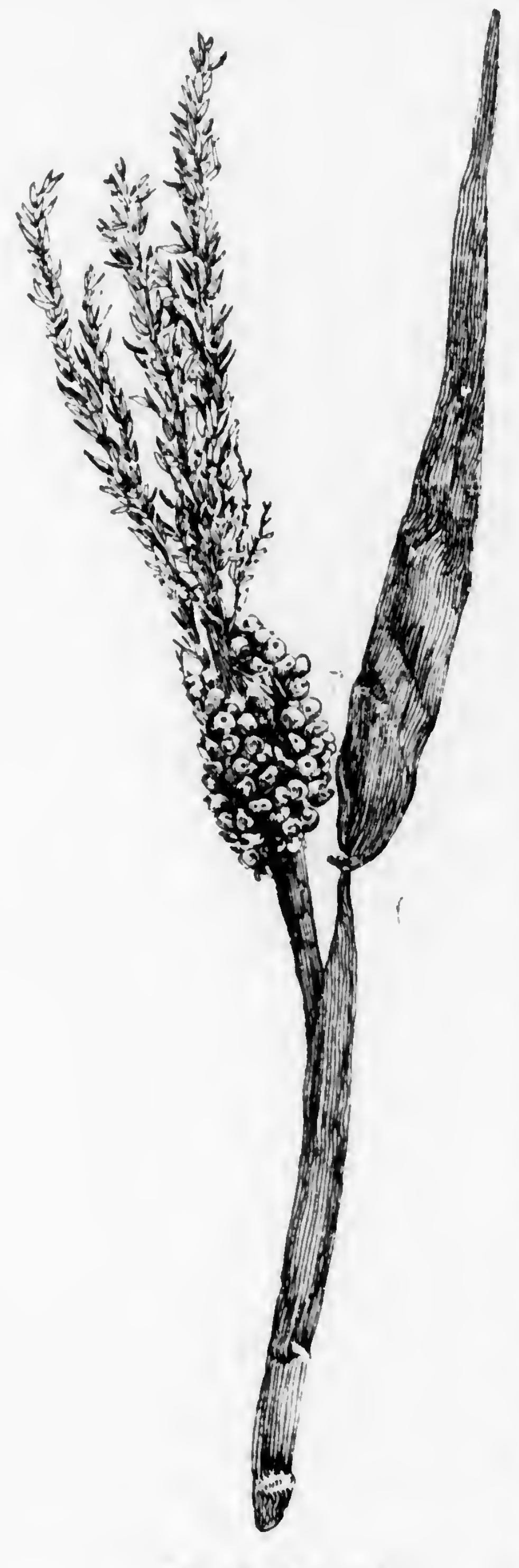

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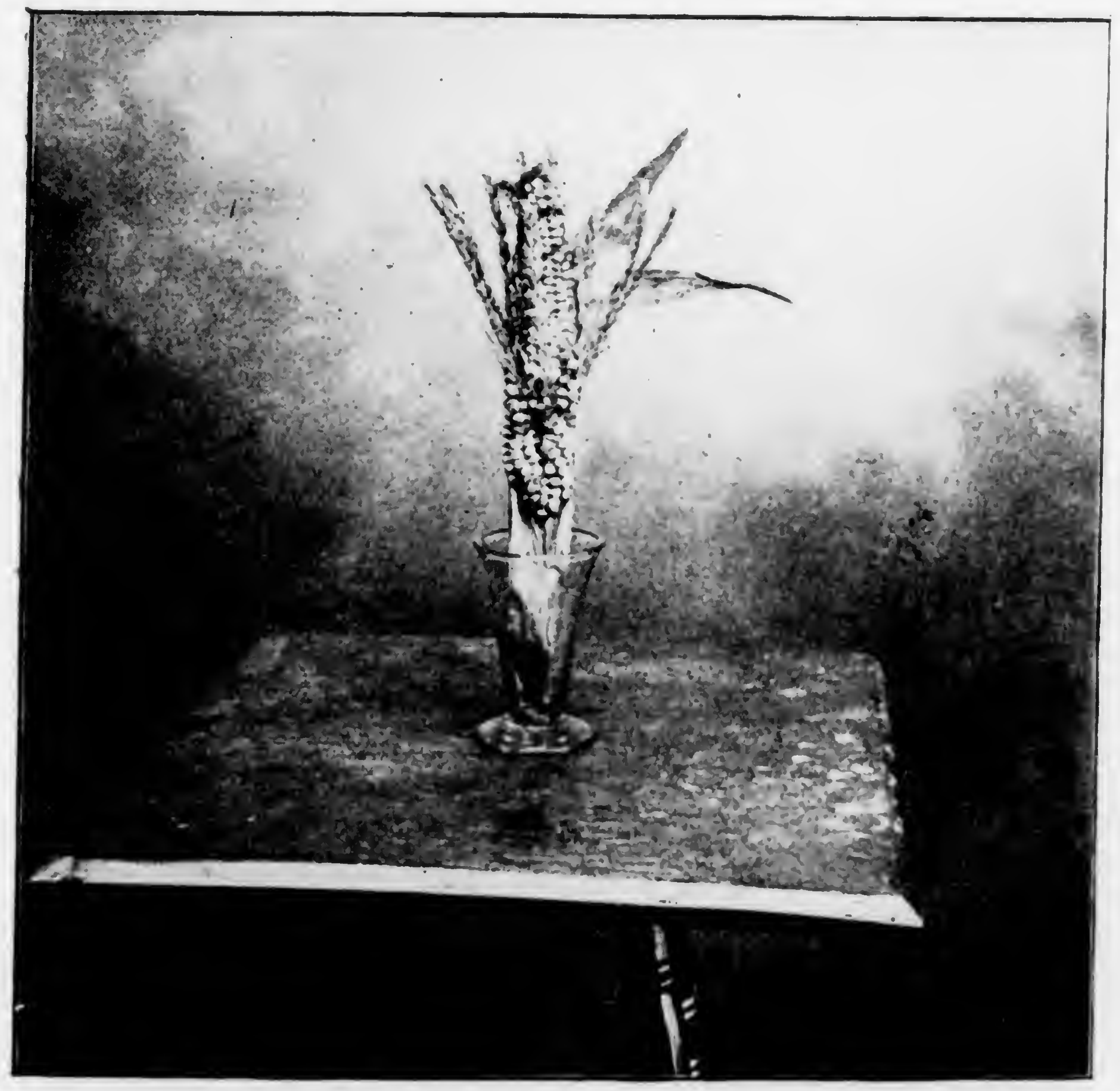

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INTENTIONAL SECOND EXPOSURE

PLANTS IN HEAVY BOXES.—A Florida correspondent, referring to a suggestion made in MEEHANS' MONTHLY, that many large plants could be taken out of their boxes and replaced again in the cellar or other places for protection during severe weather, instead of lowering the heavy boxes themselves, questions whether this would apply well to the Sago plant. He doubts whether the Sago plant would well endure such treatment. The writer of this paragraph can only say, that with him Sago plants are planted in the open ground during Summer, and then replaced in pots or boxes for the storehouse during Winter, and again set out in the Summer season. No difficulty whatever is experienced with the plants under this treatment, and it would be difficult to see why the same result should not apply to a plant growing in a box as to one growing in the open ground. Certainly succulent plants raised in boxes, such as the American Aloe, do remarkably well under the treatment suggested,—and there seems to be no reason why, if plants of these varying characteristics do well under the treatment, it might not be a general rule with most plants.

SEEDLING DAHLIAS.—A very pleasant occupation for the amateur flower grower, is the endeavor to raise new varieties of garden flowers from seed. The Dahlia especially offers good inducements, as they change remarkably from seed. It is not necessary to use any cross-fertilization. Several kinds of Dahlias are grown together, and seeds taken from these. The seedlings are almost certain to be of different varieties to or to differ from the parent. The early flower of the Dahlia should be the selected. It is better to cut off some of the petals soon after they have faded, or, otherwise, during a rain storm, the whole head rots. The seeds can be cleaned out in the fall, and set in the ground early in the spring. They usually flower the first year from seed.

VINES CLIMBING OVER TREES. — Some people suppose that Ivy is injurious to trees. This is not the case as long as the branches grow in a perfectly upright condition. When the Ivy or any other vine is allowed to encircle a trunk, in this way, checking the perfect flow of the sap, it will injure the trees ; but in no other way. Sometimes branches will be allowed to extend over the spreading portion of the trees, getting up among the leaves and interfering, thereby, with the ability of the spread of the trees to get nourishment through its leaves ; then it is also an injury. It is no uncommon thing to see trees and shrubs entirely destroyed by the vines which grow over them, not because of any injury by the attachment, but simply by the leaves of the vine overshadowing those of the tree over which the vines are straggling.

CHOROGI.—This is the Japanese name of a vegetable derived from the tubers of *Stachys Sieboldii*. These tubers are not very large—not much larger in fact than good sized peanut pods, but are produced in immense quantities, are easily washed and cleaned, and consequently give no great trouble to boil. It is a Japan species, but is closely related to our eastern American, *Stachys palustris*, though botanists can easily tell the distinction. We think it quite likely that if the American species were closely examined, it would be found occasionally to have tuberous roots also. The writer of this paragraph, a year or so ago, found very large tubers in great quantity—tubers as large as Lima beans, around the roots of a closely allied plant, *Lycopus Americana*. Although it was known that this plant occasionally produced small tubers, it was not until this discovery understood that they were so large or so numerous.

THE PEPPER TREE OF CALIFORNIA.—Mrs. D. B. Fritch, of Pasadena, California, dissents from the opinion expressed in some Californian papers, and referred to recently in MEEHANS' MONTHLY, that the tree exudes a gummy substance to an extent as to be found annoying. She says that at Riverside, Redlands, Colton and Los Angeles the trees are being still planted for shade trees in large numbers, and appear fully as popular as they ever were.

PROPAGATING THE WISTARIA.—It is not generally known that the Wistaria grows from root cuttings. Layering however is a very good method where there is room for it. The trailing shoots root by being buried in the earth a little,—but root better if a slit is first made in the shoot. There are now a white and double purple, besides the old purple kind.

THE JAPAN CHESTNUT.—The introduction of the Japan Chestnut brings up again before botanists the question of the specific differences between the chestnut of the old world, *Castanea vesca*, and the forms found in other countries. There are still some who class them all as mere varieties of forms of this species. Those who are with them constantly, however, and see them grow, have no difficulty whatever in observing characters which would be considered entirely specific, although perhaps these characters may not be observed by those who have only herbarium specimens. The American chestnut is very readily distinguished from the European by its branchlets—these are always slender and twiggy, while the European are thick and heavy. The American chestnut leaf is very thin, while the European one is extremely thick and shining. The Japan is twiggy in common with the American species, but the leaves are plicate and very deeply serrate. There is certainly just as much distinction of a specific character between *C. Americana* and *C. Japonica*, and the *C. vesca* of Europe, as there is between the dwarf chestnut of eastern America, *Castanea pumila*, and the Japan chestnut ; yet these two latter are regarded as distinct by those who do not admit the others. They are perhaps more closely related than species are in other families,—but as the several kinds always retain their distinctive characters generation after generation, there is no particular reason for considering them all one thing. It is one of those cases where the horticulturist cannot follow the botanists, as, for all practical purposes, the forms must be kept distinct. A nurseryman who sent out a Japan chestnut for the Spanish, or the Spanish for the American, would not be pardoned.

A NEW PRIMROSE. — The whole tribe of Primroses, give us delightful company. What our gardens would be without the Chinese Primrose it would be hard to tell, and the many forms of the English Primrose, especially the Polyanthus, many lovers of hardy flowers would seriously miss. *Primula obconica* is a very good addition to the class. In the old world they have another which is spoken highly of, from the Himalayan mountains which no doubt will be hardy here. It is known as *Primula sikkimensis*.

FRUITS AND VEGETABLES.

PEACH GROWING UNDER DIFFICULTIES.—In countries unfavorable to the outdoor cultivation of the peach glass houses are built for their accommodation, and great success follows this method of treatment ; in fact, it has been asserted that under proper management, a house of not particularly large size would grow as many peaches as one could get in an ordinary orchard, covering half an acre of ground. This, however, must be under extremely favorable circumstances ; But still it cannot be denied that remarkable and wonderful success follows this artificial system of culture. They are not only grown in the open ground, or in borders, as the practice is technically called, but are often made to produce enormously when grown in pots. Illustrations frequently appear in horticultural papers, showing this method of pot culture and what excellent results can be had from it. A number of growers, however, in America have them in this way,—not so much because of any difficulties in outdoor culture, as to have them early ; in other words, for forcing. They can be produced in this manner so as to have the fruit ripe in April and May ; and indeed it is said that some have been gathered under extremely careful and intelligent culture as early as March. This, however, it is presumed not to be very often the case.

REMEDY AGAINST THE PLUM KNOT.—"The Rural New Yorker" states that a correspondent paints portions of his plum trees, on which the plum knot appears, with coal oil, and that this eventually stops the growth of the swelling, known as "the knot." By taking it in time he says that the disease does not spread and that the knots eventually peel off, leaving only a scar to mark the spot. As this disease is caused by a minute fungus, there can be no doubt of the accuracy of this observation. Oils of all kinds are well known to be fatal to all fungous organisms. It is more than likely that if the plum trees were to get a painting of pure linseed oil, or any other vegetable oil once a year, they would continue at all times healthy,—as in this case the spores from which the fungus germinates would be destroyed before they had the opportunity to do any damage at all.

Bagging Grapes.—If any more were needed to prove the point made by the scientific men that many diseases of plants are caused by microscopic fungi, the spores of which are borne through the atmosphere, the result of bagging grapes would afford the necessary evidence. Scientific men prove beyond a doubt that rot, mildew, and other so-called diseases of grapes are caused by the growth of small species of microscopic fungi which originated on the fruit from spores borne by the atmosphere.

When the bunches of the grapes are inserted in paper bags at once after flowering, they are kept perfectly clear of all these diseases. No further argument need be necessary to show the origin of the disease. The bags keep away the spores, and the fruit remains perfect ; but the bagging teaches us another lesson of great advantage in practical cultivation. Some people believe that the coloring of grapes is a result of light, and they thin out leaves frequently, in order that the sun may gain some advantage, as they suppose, in the coloring of the grape ; but careful observers have long ago known that this was an injury, and that grapes ripen to the full perfection of their color just as well in deep shade as with abundant sunlight. Grape vines growing on the ground, where the leaves have kept the surface in utter darkness, will still produce the finest and best of black or red grapes ; while, on the other hand, grapes exposed to full sunlight are known not to ripen any better than those in comparative darkness. The old and intelligent cultivator of the grape under glass when he wished to produce the finest colored grapes, would frequently shade the grapes just before ripening, with the special view of getting darker and blacker grapes. However, if all these results of practical experience went for nothing, the modern practice of bagging would teach the lesson. Grapes in the total darkness of a paper bag yet produce their proper dark colors to absolute perfection. Ripening is, in fact, a vital process, and not altogether a chemical one,—and vigorous, healthy leaves are essential in this vital process. Another point, showing that ripening is a vital and not wholly a chemical process, is evidenced in the act of ripening in the bags. When a tree is somewhat diseased, as cultivators well know, the fruits precociously ripen. A peach tree, afflicted with the disease known as yellows, ripens before one that is perfectly healthy. A bunch of grapes in a bag does not ripen quite as soon as one fully exposed, and the reason is that there is less of a struggle for life, less of a strain on vital power when it is protected from its enemies by the bag than when exposed ; and this increased vitality is best evidenced by a little later ripening of the grape—just as we find it in the case of the diseased peach already noticed. It is customary sometimes to deride the scientific horticulturist ; and it must be confessed that sometimes he allows his theories to run away with him ; but in the large majority of cases, cultivators owe largely of modern success to the great advance made in scientific knowledge.

Cultivating Strawberries.—The strawberry leaf disease, known as the spot, has been much more injurious during the last quarter of a century than it was in former times ; and growers are looking about for some explana- of the spread of this trouble. In most all cases a new variety soon "runs out," as it is called, and chiefly through the operation of this disease. New varieties are continually being introduced—not because they are much better than the varieties that have preceded them—but on account of the older varieties going back ; in fact, no one will contend that the strawberries of to-day, as a rule, are even as good as they were in former times. It is thought that the old method of cultivation, which moderns have laughed at, might not have been such bad practice after all. The practice was to grow the strawberries in beds ; as soon as the crop was gathered the leaves were mown off with the scythe and burnt, and a new crop of leaves came up before winter. With the progress of vegetable physiology this was thought to be very bad practice. The argument was that leaves make food, and the more leaves the better. This would be true if the leaves were healthy leaves ; but diseased leaves are worse than no leaves at all. No one ever thought of the strawberry spot in those days ; in fact a specimen of this disease was rarely seen. It is now believed that the practice of mowing and burning the leaves was advantageous, in this that it destroyed all attempts of this fungus to propagate itself, and was therefore beneficial rather than otherwise. It is an illustration of a point frequently made that though our forefathers were not able to philosophize on their garden practices as closely as we may, they were able to find out a great deal from nothing at all but practical experience. One thing our strawberry amateurs might do, which is not done now, and that is to cut off during the season and burn every leaf which shows a spot as soon as it is observed. This probably would preserve their favorite varieties from degenerating.

Origin of the Peach. — Nothing is now more universally accepted than the fact that the Peach is an improved variety of the Almond. The Almond has a thin shell around the stone, which splits open and exposes the stone when mature. This outer skin has simply become fleshy in the peach, so that is all that gives it its specific character. It seems now clear from investigation in the history of ancient Babylon, that in their gardens, now nearly 4000 years ago, the Peach was cultivated then as it is now. It must have been many years before this that the Peach was improved from the Almond, and this fact goes to show the great antiquity of the fruit. Possibly gardening in some respects, at least so far as it relates to many of our cultivated fruits, was as far advanced six, or perhaps eight or 10,000 years back, as it is to-day.

Phœnecians, many thousands of years ago, as is proved by the records, had in their gardens almonds, apricots, bananas, citrons, figs, grapes, olives, peaches, pomegranates, and even sugar-cane was in extensive cultivation. Certainly this shows how very far advanced these nations were in garden culture these many years ago.

The Coming Fruit Crops. — Mr. L. N. Bean, of Mt. Vernon, Ill., reports on the end of April admirable prospects for plums, peaches and strawberries the coming year, notwithstanding the plants seemed to suffer from the remarkable drought of last fall. A a general rule the drought would indicate that large crops would follow. In the house-cultivation of plants and fruits it is customary to subject the plants to a drying period. Strawberries for instance, cultivated in pots, towards the end of the season are usually laid on their sides, expressly to get dry ; and Callas and other bulbs are "dried off," as it is termed, expressly with the view of increasing the productiveness of flowers and fruit the following season. We do not know that this point has ever been brought out prominently in regard to orchard trees ; but it is no doubt just as true, and we may take it for granted that a comparatively dry fall practically means an uncommon fruit crop the following season.

Plum Culture on the Pacific. — Fruit growers in the East can have but a very faint impression of the immensity of the fruit interest in California. It is questionable to which California owes the most of its wealth—its gold mines or its fruit orchards. Take, for instance, the plum. One single grower, says the *Hanford* (California) *Journal*, has 544 acres all set to the prune variety. On this tract are 66,000 trees. This one orchard contains as many trees as some whole states do in the eastern part of the Union.

Blackberry and Raspberry Stem Borers. —It has long been known that the blackberry and raspberry are often very much injured by a borer which penetrates the stem and leaves the cane comparatively hollow. The "Bulletin of the New Jersey State Agricultural Experiment Station" states that the insect which does the boring is known as *Agrilus ruficollis*. It usually leaves a gall where it penetrates the stem, and if these are cut off and burnt as soon as apparent, the insect is very readily kept under.

Everbearing Raspberries.—The marvel of four seasons—a variety of the European stock —and the Catawissa, a variety of the American Black,—have hitherto been our best autumn bearing raspberries. Mr. Hatfield, of Wayne County, Indiana, writes that he has discovered a variety that will yield 250 berries to a cane in the middle of August.

Rocky Mountain Cherry. — Under this name *Cerasus pumila*, the ordinary sand-cherry, was formerly distributed. More recently, the *Cerasus demissa*, a species scarcely distinct from the ordinary choke cherry—*Cerasus Virginiana*—is being circulated under the same name.

BIOGRAPHY AND LITERATURE.

YOUTH IN OLD AGE.

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He plants youth ;
Vigor won for centuries, in sooth ;
Life of time that hints eternity !
Boughs their strength uprear,
New shoots every year
On old growths appear.
Thou shalt teach the ages, sturdy tree,
Youth of soul is immortality.—
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GARDENING AND FARM NOTES.—Under the title of "Market Gardening and Farm Notes" Mr. Burnet Landreth, formerly Chief of the Bureau of Agriculture at the Centennial International Exhibition, has issued a neat little book of 213 pages, treating of many leading topics in practical market gardening. It treats of the subject practically as well as scientifically. Chemical manures and stable manures get equal attention,—the manner of sowing seeds,—the best methods of transplanting,—relation of treating crops ; with discussions on diseases and garden insects, and an especially interesting chapter on heredity in plants, are prominent topics discussed. On some of the more staple crops for market, such as celery, onions and mushrooms, special chapters are given. It is not possible in a country so large as North America, to get explicit directions for the operations of the garden, but Mr. Landreth has divided the calendars into Northern and Southern, and this gives some advantage. The firm of D. Landreth & Sons, of which Mr. Burnet Landreth is a member has been so long known in connection with progressive market gardening operations, that a work of this kind by one of the firm must have many special advantages.

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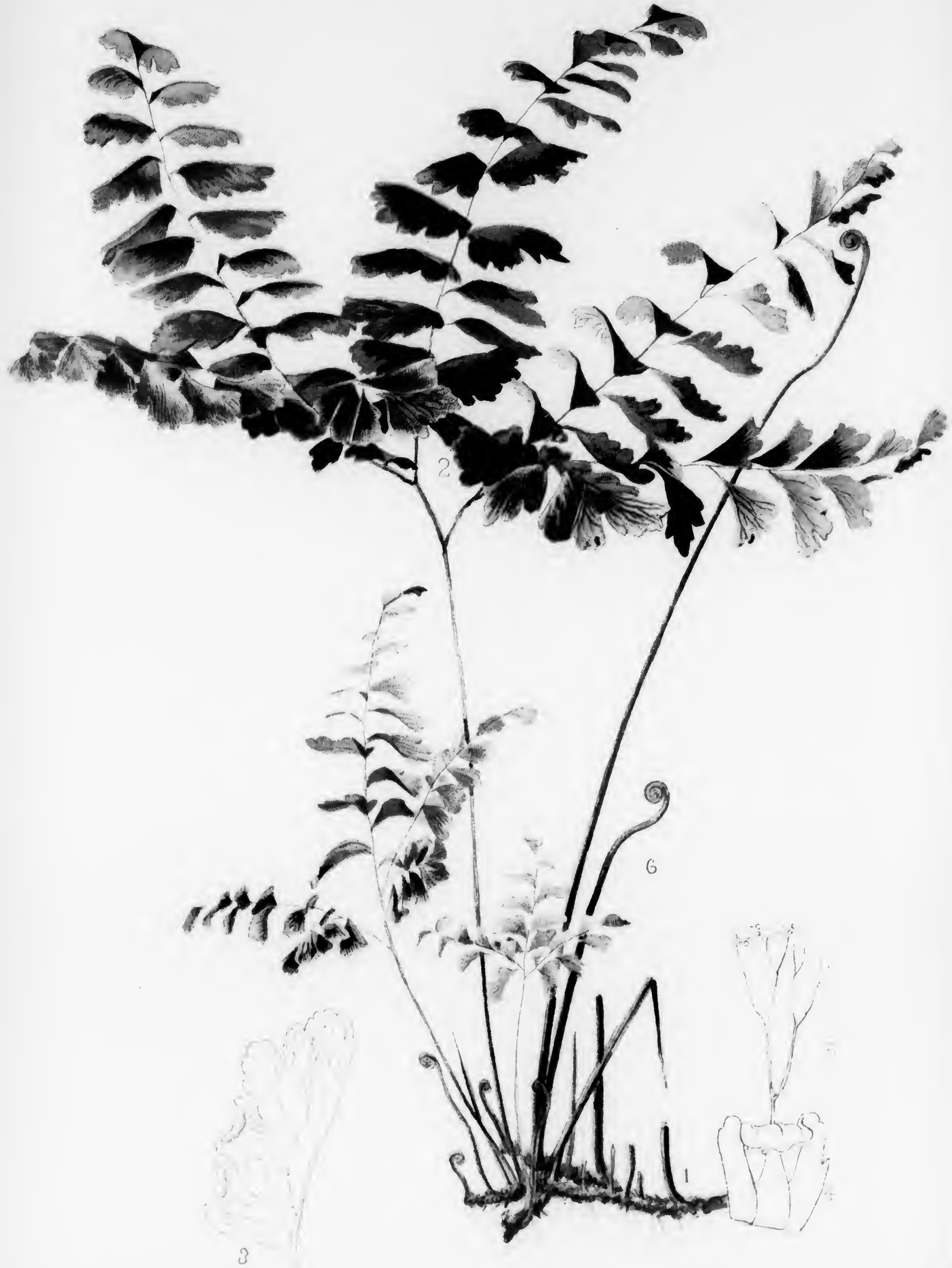
INTENTIONAL SECOND EXPOSURE

GENERAL NOTES.

Open Spaces in Cities.—Under the lead of Councilman, Thomas Meehan, Philadelphia, during the past ten years, has embarked in the project of securing open spaces, of between 5 and 10 acres, for its massed population. That city is under the disadvantage, so far as it may be a disadvantage in some cases, of not being allowed by the constitution to borrow more than 7 per cent. of the amount of the assessed valuation of its property, and that 7 per cent. was reached before the passage of the new constitution. It is unable to borrow, and these small spaces have to be acquired out of annual taxation. It is to its credit that, under these circumstances, it has already secured a number of open spaces to the value of probably three million of dollars, and the work of locating is still going on, though necessarily slow under these financial conditions. These open spaces are not intended so much as mere beauty spots, laid out as gardens, which the eye of the æsthetic can alone revel in, but are for practical use,—for physical enjoyment as well as mere mental recreation and the supply of pure air. Other cities are going on in the same line, and especially in the old world,—the City of London especially leading in the good work. In a great measure these results are owing to the establishment of organizations which look after these special objects. In Philadelphia they have a City Park Association, which backs up and encourages the progress of the movement; and the City of London has a Public Garden Association, which follows up the same work there. Philadelphia is not depending alone on the city, but private parties frequently subscribe, or even donate the squares wholly. In the case of one of the squares, known as Vernon Park, costing $175,000, the citizens subscribed $20,000 towards helping the city pay for it,—and two or three similar parks have been free gifts. The same is true of the London Association,—and much is made of the fact that recently the Princess Louise, well known to Canadians and Americans, subscribed a considerable sum towards it. A subscription of $25,000 was also made recently for the improvement of Soho Square—the arrangement of which open space was wholly the work of the Association. The city itself only paid $15,000 towards it. Three million dollars are also being raised to make an open space of what is known as the Hackney Marshes. In addition to this one great society, London has in connection with it, what are known as Open Space Associations, which take in especially the collection of funds to help the city in the work. The great misfortune with most people is that they expect municipal bodies of counties or of cities to do everything out of taxation.

"Flowers and Ferns of the United States."—It is not as generally known as it might be, that Meehans' Monthly, so far as the colored plates and leading chapters are concerned, is an exact counterpart of the "Flowers and Ferns of the United States," the stopping of the publication of which by the death of its former publisher, caused so much regret. Subscribers to Meehans' Monthly who wish to bind the volumes, will therefore practically have a continuation of this splendid work. Mr. Thomas Lyman, of Downer's Grove, Ill., referring to this fact writes, after receiving the bound volumes so far as they have gone, that with those that have gone before and those to follow, "will make a very desirable addition to one's library. I like it very much indeed." We should be very glad if the friends of Meehans' Monthly will let those who may have been subscribers to the "Flowers and Ferns of the United States," know of the facts herein noted.

The Next Plate. — The whole northern continent will be interested in the next plate, which will represent our great Maiden-Hair Fern, *Adiantum pedatum*, which is found from the Atlantic to the Pacific. A friend at the conductor's elbow believes the historical and popular chapter which accompanies the plate, one of the most instructive yet written.



ADIANTUM PEDATUM

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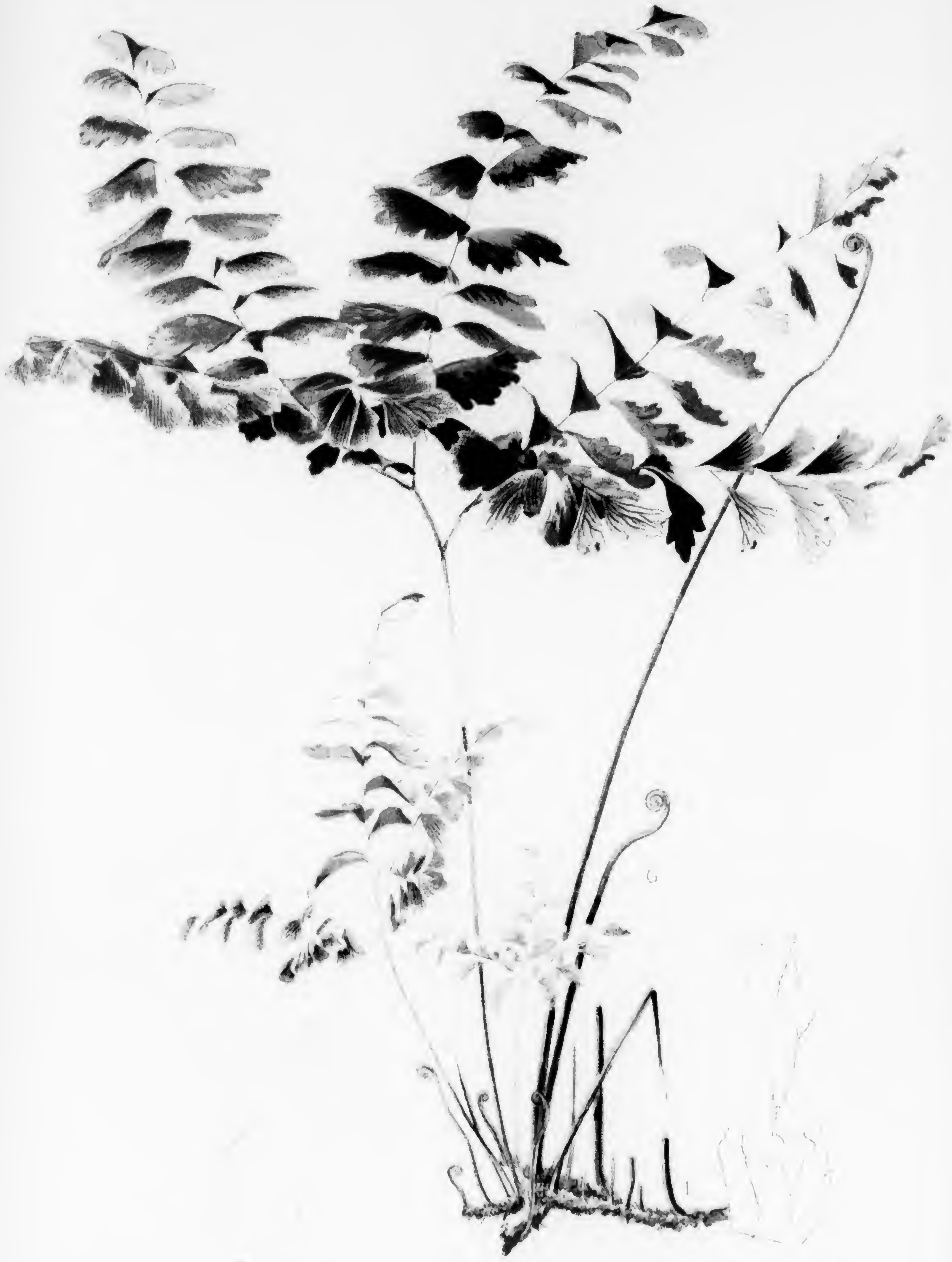
COMMON MAIDEN-HAIR.

NATURAL ORDER, FILICES.

ADIANTUM PEDATUM, LINNÆUS.—Frond forked at the summit of the upright slender stalk (nine to fifteen inches high), the recurved branches bearing on one side several slender spreading divisions, which bear numerous triangular-oblong and oblique short-stalked pinnules; these are as if halved, being entire on the lower margin, from which the veins all proceed, and cleft and fruit-bearing on the other. (Gray's *Manual of Botany of the Northern United States*. See also Chapman's *Botany of the Southern United States*. and Wood's *Class-Book of Botany*; Eaton's *Ferns of North America*, and Williamson's *Ferns of Kentucky*.)

This very handsome fern grows to such large proportions that it was difficult to decide whether to take only a portion of a mature frond for our small page, or to select a complete plant of moderate size that would serve to show all its general characteristics, giving only enlarged views of the various parts of the fructification. Now, with the picture before us, the wisdom of the last course is apparent, as it is doubtful whether so complete a view of the whole plant could be better presented in so small a space. It is well, however, to remark that when the plant is growing vigorously it has a thick rhizome or creeping underground stem as thick as a lead pencil, from which the straight fibrous roots descend into the earth, and the fronds ascend into the atmosphere. In the experience of the writer no specimen has ever been found that had not a forked rhizome, and this tendency to divide, especially in some of its parts in one direction is a characteristic almost peculiar to this fern, and on account of its very marked disposition in this respect, its name *pedatum* was suggested to the earlier botanists,—pedate in botany signifying divided like the hand, or, perhaps, more strictly, like the foot of a bird. The habit of forking, which we find in the rhizome, is exhibited in the stems of the frond, which divide into two equal portions at the top (Fig. 2), and in large specimens, each division takes a downward curve, while the branchlets come out always on the upper side of this curve. This is shown to some extent on our small specimen. On the right hand branch of the fork only one branchlet appears from the upper side, but on the left hand one two appear. In vigorous specimens as many as six of these branchlets will come out from the outside of the curve; and, occasionally, the lowermost branchlet will again have one or two secondary branchlets, also on the outside line. If we now examine the enlarged frondlet (Fig. 3), we see the same characteristic. As noted in the description of Dr. Gray, it has the appearance of being but half a leaf, — the original leaf having been cut through the midrib, leaving the veins on the side. The little veins, when they fork, have also the one-sided character to a great extent. The reason for this peculiar unilateral character does not appear.

Another peculiarity is in the unfolding of the young fronds. While most ferns uncoil in one graduating curve, this has a double bend (Fig. 6), first curving over to the right, and then returning to the left, taking, indeed, what might be called a serpentine course in development. In the end the stipe is perfectly straight and stiff. The long wiry black roots, which obtained for the long known European species the common name of "Maiden-hair Fern," are not very apparent in this species; but the general characteristics already described are so marked that one can scarcely mistake the relationship whenever a "Maiden-hair Fern" is found for the first time, for they are found in great numbers in tropical regions. Its more strict botanical characters, as used in classification, are so essentially distinct from other ferns, that there have been few attempts to make other genera out of it, as there have been in Pteris, Aspidium, and other genera handed down to us from the botanists of the Linnæan age. Mr. Thomas Moore, the distinguished English student of ferns, thus describes what these characters are :—"They have all black shining stipites, and mostly roundish or rhomboidal or ternately-curved



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NATURAL ORDER, FILICES.

ADIANTUM PEDATUM, LINNÆUS.—Frond forked at the summit of the upright slender stalk (nine to fifteen inches high), the recurved branches bearing on one side several slender spreading divisions, which bear numerous triangular-oblong and oblique short-stalked pinnules; these are as if halved, being entire on the lower margin, from which the veins all proceed, and cleft and fruit-bearing on the other. (Gray's *Manual of Botany of the Northern United States*. See also Chapman's *Botany of the Southern United States*, and Wood's *Class-Book of Botany*; Eaton's *Ferns of North America*, and Williamson's *Ferns of Kentucky*.)

This very handsome fern grows to such large proportions that it was difficult to decide whether to take only a portion of a mature frond for our small page, or to select a complete plant of moderate size that would serve to show all its general characteristics, giving only enlarged views of the various parts of the fructification. Now, with the picture before us, the wisdom of the last course is apparent, as it is doubtful whether so complete a view of the whole plant could be better presented in so small a space. It is well, however, to remark that when the plant is growing vigorously it has a thick rhizome or creeping underground stem as thick as a lead pencil, from which the straight fibrous roots descend into the earth, and the fronds ascend into the atmosphere. In the experience of the writer no specimen has ever been found that had not a forked rhizome, and this tendency to divide, especially in some of its parts in one direction is a characteristic almost peculiar to this fern, and on account of its very marked disposition in this respect, its name *pedatum* was suggested to the earlier botanists,—pedate in botany signifying divided like the hand, or, perhaps, more strictly, like the foot of a bird. The habit of forking, which we find in the rhizome, is exhibited in the stems of the frond, which divide into two equal portions at the top (Fig. 2), and in large specimens, each division takes a downward curve, while the branchlets come out always on the upper side of this curve. This is shown to some extent on our small specimen. On the right hand branch of the fork only one branchlet appears from the upper side, but on the left hand one two appear. In vigorous specimens as many as six of these branchlets will come out from the outside of the curve; and, occasionally, the lowermost branchlet will again have one or two secondary branchlets, also on the outside line. If we now examine the enlarged frondlet (Fig. 3), we see the same characteristic. As noted in the description of Dr. Gray, it has the appearance of being but half a leaf,—the original leaf having been cut through the midrib, leaving the veins on the side. The little veins, when they fork, have also the one-sided character to a great extent. The reason for this peculiar unilateral character does not appear.

Another peculiarity is in the unfolding of the young fronds. While most ferns uncoil in one graduating curve, this has a double bend (Fig. 6), first curving over to the right, and then returning to the left, taking, indeed, what might be called a serpentine course in development. In the end the stipe is perfectly straight and stiff. The long wiry black roots, which obtained for the long known European species the common name of "Maiden-hair Fern," are not very apparent in this species; but the general characteristics already described are so marked that one can scarcely mistake the relationship whenever a "Maiden-hair Fern" is found for the first time, for they are found in great numbers in tropical regions. Its more strict botanical characters, as used in classification, are so essentially distinct from other ferns, that there have been few attempts to make other genera out of it, as there have been in Pteris, Aspidium, and other genera handed down to us from the botanists of the Linnæan age. Mr. Thomas Moore, the distinguished English student of ferns, thus describes what these characters are:—"They have all black shining stipites, and mostly roundish or rhomboidal or ternately-curved

INTENTIONAL SECOND EXPOSURE

pinnules, the fronds being very various in size and general character. The structure is very peculiar,—unlike that of any other fern. The sori are marginal, covered by the indusia, which are either roundish and distinct, or become blended into a linear form, these two conditions respectively resembling the fructification seen in Cheilanthes and Pteris ; but it is resemblance only, the fructification (spore cases) being in the latter genera seated on the frond itself, and covered by the indusium ; while in *Adiantum* they are not attached to the frond, but to the under side of the indusium, and are therefore turned upside down on to the surface of the frond. This structural peculiarity distinguishes *Adiantum* from all other ferns but *Hewardia*, which is known by having a reticulated venation, that of *Adiantum* being free." In order that the student may the better understand this description of Mr. Moore, we have given the enlarged Figs. 4 and 5,—in Fig. 4 the sporangia are just seen at the edge of the indusium. Fig. 5 is the same, with the indusium turned back, and showing the sporangia at the apex of the veins.

The common Maiden-hair Fern has a very ancient history. The younger Tradescant—the name being very familiar to lovers of our wild flowers in the *Tradescantia*—made one of the earliest botanical visits to this country, and brought with him to England from Virginia in 1628 a fair collection of living plants, among which were *Cystopteris bulbifera* and our present plant. These were, therefore, the patriarchs of American ferns in British gardens. Cornutus, however, was not long after in getting a knowledge of it, for he wrote a work on Canadian plants in 1635, and designates it as the *Adiantum Canadense*, by which it was known till the time of Linnæus. In 1671 Bauhin writes of it as having had it from J. Burser, who obtained it from Brazil, on which account he named it "Adiantum fruticosum Brasilianum." It is singular that where Bauhin refers to plants "from J. Burser from Brazil" they are all North American plants, and in those early times Burser had not probably a clear idea where "Brazil" was. In 1686 we find Ray describing it as the "Black Maiden-hair," and he refers to Tradescant's bringing the plant to England in the first place from Virginia. In 1695 Plukenet figures it, and says at that time it was quite common in the gardens around London. At the present time it is one of the most popular ferns in English collections.

Of American authors, John Josselyn, "gentleman,' in his "New England Rarities," published in 1672, is the first to notice it. He says: "The Maiden-hair, or Capillus veneris verus, which ordinarily is half a yard in height. The apothecaries for shame will substitute Wall-rue no more for Maiden-hair, since it grows so abundantly in New England, from whence they may have good store." The Wall-rue, it may be noted, is *Asplenium ruta-muraria*, a very small species of fern. Kalm notices it in his travels, and seems to be the first to refer to its "pedate" character, and which suggested to Linnæus its specific name.

The extract from Josselyn of its use by the apothecaries, brings to mind how celebrated the *Adiantum capillus-veneris* was in medicine in ancient times. Ray refers to a Doctor Peter Formius, of Montpellier in France, who issued a work in 1644, to show that this fern was a universal panacea, bearing health to all parts of the body. In these days our Griffith simply says of this, and Adiantum pedatum, "they are considered as pectoral and demulcent," and this is all.

If advantageous it would be a good consideration that it could scarcely be destroyed. It has a geographical range, accorded to few ferns. It is found as far south as the mountain district of Alabama, becomes very abundant in southern Illinois, and then goes up through all the states east of the Mississippi into Canada, except those which jut on the Atlantic Ocean, though as it gets northwardly it loses this peculiarity, as it has been collected at East Hampton in Long Island by Mr. E. E. Miller. It is found at Leavenworth in Kansas, and again in California, curiously, as Prof. Eaton remarks, skipping the mountains of Colorado. Crossing by way of Behring's Strait, into Asia, it is found over most of that quarter of the globe.

EXPLANATION OF THE PLATE.—1. A small plant with forked rhizomes, in an early stage of growth. 2. Showing the forked stipe. 3. Enlarged pinnule or frondlet, showing the distribution of the veins on one side of the marginal rib. 4. Part of a pinnule showing the sporangia on the under surface near the edge of the indusium. 5. The same with the indusium pressed back, showing the sporangia on the end of the veinlets. 6. Shows the *right* serpentine growth of the unfolding stipe.

WILD FLOWERS AND NATURE.

SONG TO A PET CICADA.

Cicada, you who chase away desire,
Cicada, who beguile our sleepless hours ;
You song-winged muse of meadows and of flowers,
Who are the natural mimic of the lyre,
Chirp a familiar melody and sweet,
My weight of sleepless care to drive away ;
Your love beguiling tune to me now play,
Striking your prattling wings with your dear feet.
In early morning I'll bring gifts to you
Of garlic ever fresh and drops of dew.

From the Greek of Meleager.

VARIATION IN THE LEAVES OF HORSE RADISH.—MEEHANS' MONTHLY felt that Mrs. Kellerman's deductions (see p. 67) would not prove acceptable to botanists generally,—but that they suggested much that would greatly aid botanical progress. The following note from M. H. de Varigny, of Paris, will not, therefore, be ranked amongst the unexpected criticisms :

"Facts are required before we can accept Mrs. Kellerman's interpretation. It must be shown that carbonic acid is less abundant in the air during autumn or summer than during spring, and till this has been conclusively demonstrated we have nothing but 'mere speculation.' All the experiments go to show that the proportion of oxygen, carbonic acid, nitrogen, are the same the whole year round, and before the sub-pinnatified leaves, are explained by reason of carbonic acid, it must be shown that the experiments are wrong, and that there is a positive decrease of carbonic acid. I do not know of any reliable experiments going to show this last point."

A BEAUTIFUL DISPLAY OF VIOLETS.—The *New York Sun* notices that along the line of the railroad plying between Jamaica and the near neighborhood of Babylon in Long Island, the country in early spring was one dense mass of beautiful violets—the description indicating that *Viola pedata* was the kind referred to. It regrets that sweet odor wasn't given to this violet as well as singular beauty.

THE ASPHODEL OF HOMER.—The following correspondence in regard to the identity of the modern *Asphodel* with that of the ancients, will interest our classical readers :—

"A good many years ago, as you will see by the following letter, I wrote to Prof. Gray, saying that I believed the *Asphodel* of Homer was the *Narcissus poeticus* of botanists, quoting from the 'Odyssy,' XI, 538, the passage :

* * * *ψυχὴ δὲ ποδώκεος Αἰακίδα φοίτα, μακρὰ βιβῶσα, κατ᾽ ἀσφοδελειμῶνα.*

His obliging reply will, I think, be interesting to many of your readers.

Very truly yours,
HOWARD WORCESTER GILBERT."

Botanic Garden, CAMBRIDGE, MASS.,
Sept. 15, 1873.

Dear Sir.—The best thing to consult is "Prior's Popular Names of British Plants." The *Asphodel* of Greek poets is supposed to be *Narcissus poeticus*, of Lucian—that of modern botanists, *Asphodelus*, *L.*; of earlier English and French poets—*Narcissus pseudo-narcissus*. That with edible roots, mentioned in later Greek writers, to which Charon alludes, in Lucian's *Κατάπλους* is doubtful wholly.

Truly yours,
A. GRAY.

STUARTIA.—This beautiful hardy shrub, which is one of the few American species related to the tea plant of China, is sometimes written *Stewartia*. "The Gardeners' Chronicle" notes that the plant was named in honor of John Stuart, the third Earl of Bute, who was very much interested in botany.

A LARGE BUTTONWOOD TREE.—Josiah W. Leeds states that, on the banks of the Wabash river in southwestern Indiana, due west from Princeton, is the remains of an enormous Sycamore which, in 1863, his brother found to measure 33 feet around the base. The stump was about 15 feet high.

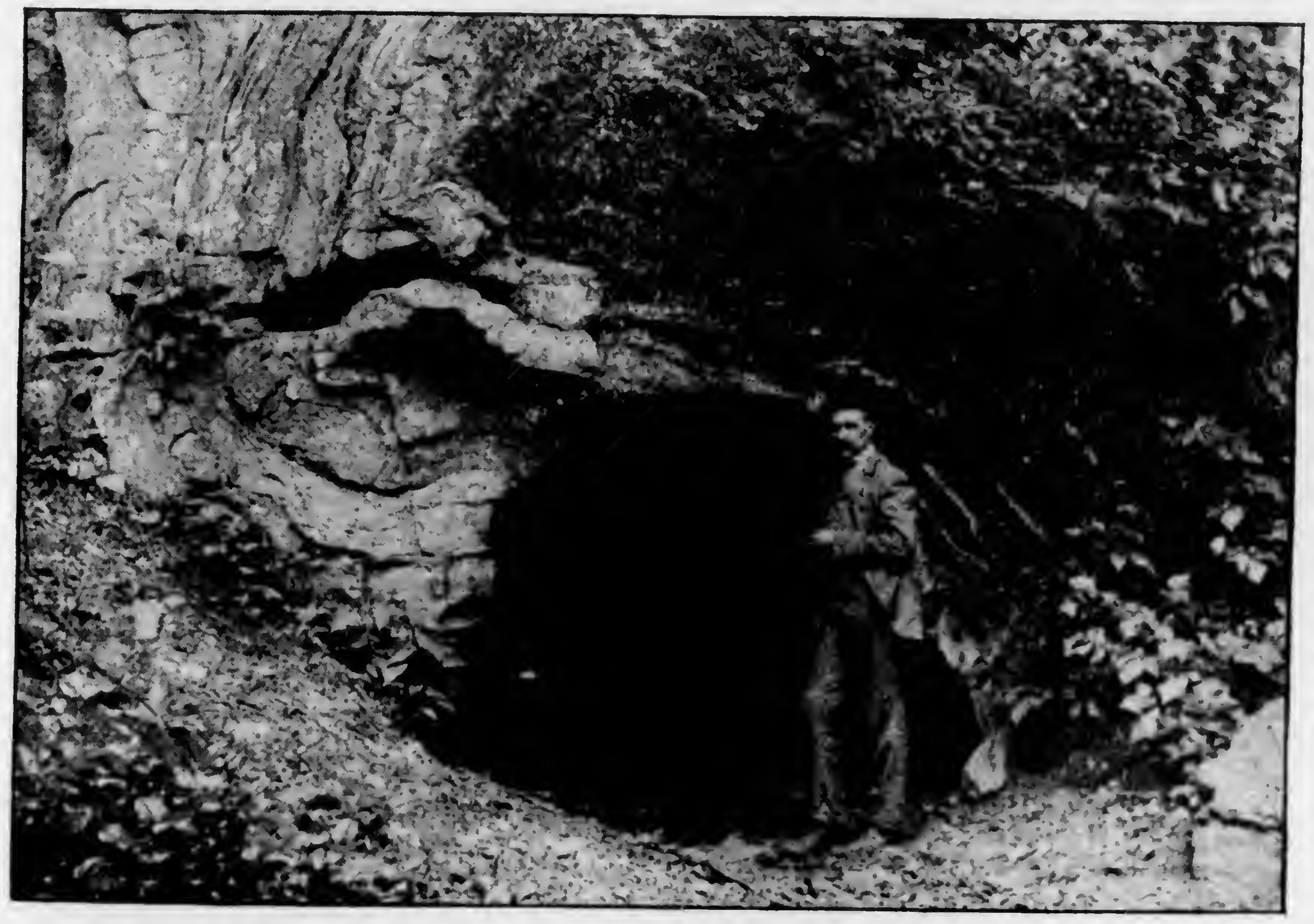
THE SEAT OF VITALITY IN TREES.—Mr. T. Wheeler, of Moscow, Vt., in reference to a recent note in MEEHANS' MONTHLY on the "Vitality of Girdled Trees," page 51, makes the pointed inquiry, as to where life and death meet in a tree, and how can that point be discovered? It may be difficult to answer this inquiry clearly in a few words, but it may be said, that a tree is merely a collection of innumerable individuals—one single small cell really comprises that individual—and the millions of cells of which a tree is composed, make the compound organism which we call a tree. To continue the life of a tree new cells germinate from the old cell, and after the new cell has been formed, vitality, as we understand it, ceases in the old cell. The new cells simply constitute a living tree. In our ordinary trees these mother-cells produce the young or daughter-cells during midsummer, that grow out of the old cells. It is very doubtful whether, after these new cells have been formed, there is really any great vital power in the old ones. We may practically say, there fore, that all of the structure around the outer layer of wood cells, is destitute ot life. The whole trunk of a tree is simply a mass of skeletons of what have been living cells. They have the physical power of absorbing moisture, and perhaps aiding in carrying up this moisture by capillary attraction to the upper portions of the tree,—and in that way aiding and assisting in carrying on the vital powers,—but for all practical purposes are destitute of life in themselves. Mr. Wheeler refers to chips of the Redwood tree, growing occasionally when scattered from the trunk by the axeman,—but growth in these cases can only come from the living cells, which are just beneath the bark of the tree. New growth could not possibly come from the old interior wood.

WILD ROSES OF THE WEST.—In the far West one of the most common and beautiful of the wild roses is the Cinnamon Rose, *Rosa cinnamomea*, with its close ally, the *Rosa nutkœnsis*. The peculiar light rosy tint is possessed by few other species. In the Rocky Mountain region, *Rosa blanda*, and its close ally *Rosa Arkansana* take its place. A vase with specimens probably of the last named, as grown in western Nevada, is here presented.

WILD ROSES OF NEVADA

THE NECTAR OF FLOWERS.—An interesting question connected with the nectar of flowers is whether the bee is simply an agent transferring it as honey to the comb, or whether it undergoes some transformation in the honey bag before it becomes honey. The opinion generally entertained is that honey is a mere transfer, in which case there would be no use in trying to improve Apic races as one might desire to improve a race of cows for improved milk,—though the industrious creatures might commend themselves by a still greater industry in one race than in another. There are, however, some apiarists who believe there is a change in some slight degree effected. These point to the fact that the bee certainly can make wax out of precisely the same material as honey is made.

THE ROCKS OF THE WISSAHICKON. — Who has not heard of the attractiveness of Wissahickon? One of the best art critics in the United States stated to the writer, that he could not concede it to be one of the most beautiful pieces of scenery in the United States, but it certainly was the prettiest. The reader will have to draw the line between these two interpretations. Among the chief of its charms is the singular beauty of the stratification of the gneiss rock. In many cases large blocks have fallen out, so as to give the rocks a cave-like appearauce. This only occurs where there is a peculiar twisting in the formation. Of course caves to any great extent only exist in limestone regions. The action of strong acid wears away the limestone, and in this way miles of subterranean passage ways are formed by the dissolving of rocks. However, as in the case illustrated, hollows or caves of considerable size occur on the Wissahickon. The one illustrated is of considerable depth and is known as the "Hermit's Cave." It is said that a famous astronomer of very eccentric habits, many years ago made his home there. The figure standing at the mouth of the cave, represents one of the Arctic explorers who was on the Relief Expedition in the interest of Lieutenant Peary.



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GREASE WOOD.—A correspondent, writing from the far west describes the Grease Wood, *Rhus aromatica*, as being remarkably beautiful this year, the bushes being completely covered with their yellow, coral berries. Another "grease-wood" is *Purshia tridentata*, which has in the flowers deliciously fragrant. The Indians use the wood, she says, for medicine. It is unfortunate that the plant is bisexual, and, in consequence, there is an absence of berries from isolated plants when under cultivation. In the writer's recollection the berries of the Rhus are eaten by squirrels, and other creatures which inhabit the mountain region.

LARGE TREES IN CALIFORNIA.—The mammoth Sequoias are not the only trees that reach huge dimensions in California. At Arlington a cedar was measured last year which was 68 feet in circumference, and near the ground around the knotty roots, it was 99 feet; about 75 feet from the ground it forks into four immense branches—beneath one of which is a large knot hole—five men have been able to climb into the hole and get into the interior of the trunk at one time. It is nothing but a mere shell at present, though still bearing a considerable amount of green foliage, so says a California paper—but the species of cedar is not given.

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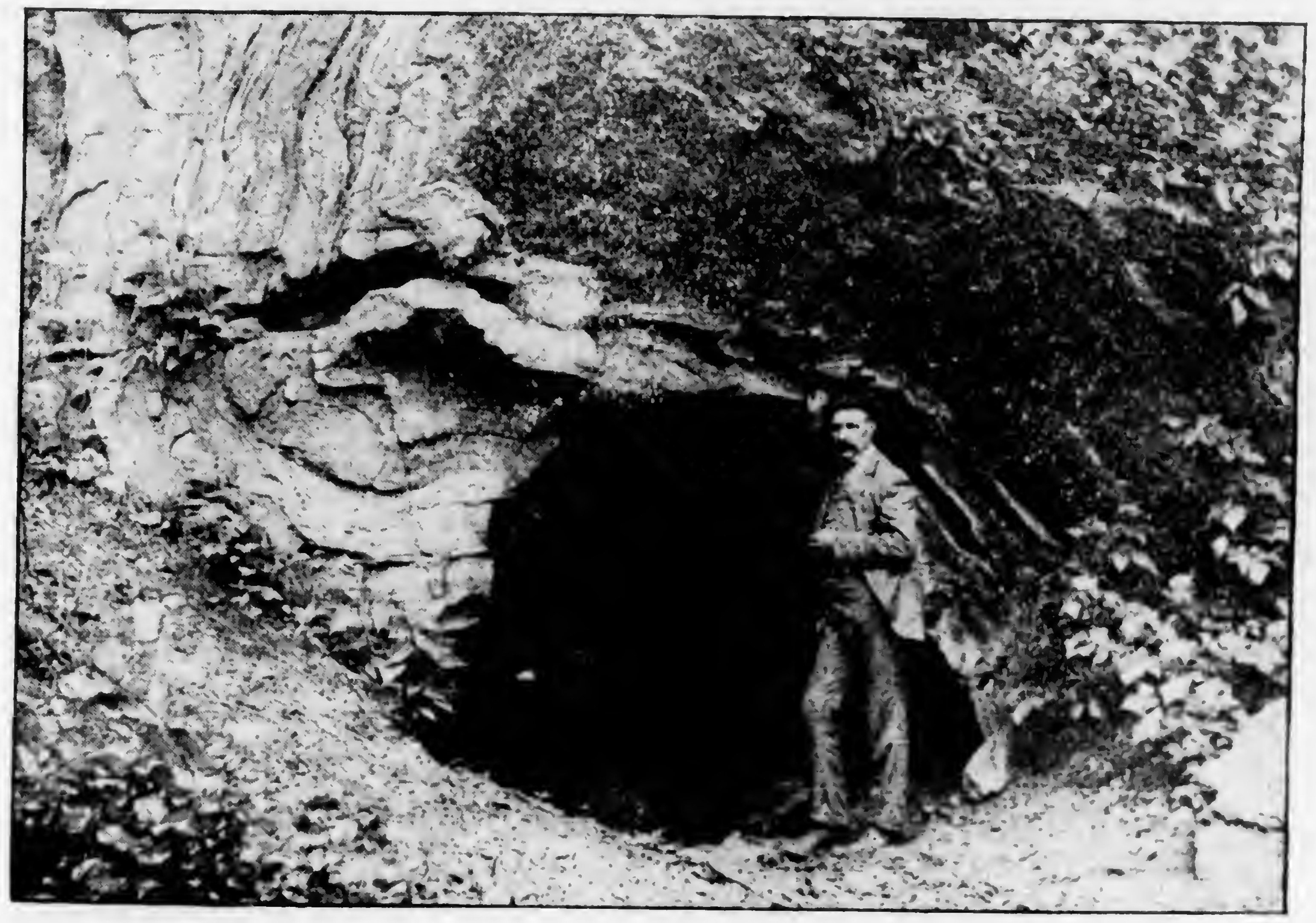

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INTENTIONAL SECOND EXPOSURE

Robinia hispida.—Mr. David F. Day, Buffallo, New York, writes :—

"Several years ago, I had this species of Locust in cultivation. As is usual, it flowered freely, but did not fruit. In apparent compensation for this failure, it spread rapidly by the root. As my plant showed no difference between it and other specimens, which I saw in gardens, I was quite disposed to believe that all cultivated plants of the species had grown, as root-offsets from one original plant. Having never seen a legume of *Robinia hispida*, and desiring one for herbarium use, it occured to me that one might be easily obtained, if I took pains, to secure perfect pollination, when the plant was in flower. I had no suspicion that the blossoms were not perfect ; but I thought that they needed extraneous aid for fertilization. But when I came to make my experiment, I met with a great surprise. There was a perfect development of pistil. The stamens seemed complete, having large anthers upon the tips of long filaments. But upon opening the anther cells, I found them void of pollen. *The plant was in fact unisexual.* It is much to be desired that the problem, whether the species is really diœcious, should be resolved by some botanist, who has the opportunity to study the plant in its native soil."

The writer of this paragraph, having the infertility of the cultivated plant in mind, met with considerable quantities of it on Lookout Mountain, Tennessee, where it forms a considerable portion of the undergrowth in the open woods in that locality, but could not find a solitary seed vessel. The examination was made in the end of August.

The Manzanita.—Those lapses of memory, which are frequently miscalled "slips of the pen," are often remarkable, and just how the term Manzanita came to be applied to the illustration given in a recent number of the magazine, is a case in point. It should have been Madroña. The Manzanita is a large shrub or small tree, and is *Arctostaphylos pungens*. *Arbutus Menziesii* is the Madroña. The error is the more inexcusable as a specimen of the Manzanita is on the writer's table as a paper weight. A number of correspondents have kindly sent us corrections.

Variation in Wild Flowers.—The florist is generally credited with producing the great variety of colors in species of flowers under cultivation, but he does little more than select that which nature prepares for him. The sharp eye can see variations in the woods and fields as well as in gardens. Mr. John K. Goodrich, of Waterbury, Ct., notes that on the 30th of May he found the first flower of *Arethusa bulbosa*—one of our most beautiful orchids—and which had the brighest color he ever saw in that species. He regards it justly as a gem of the first water among our wild flowers. He thinks that *Calypso borealis*, which he saw in flower on the 28th of March from bulbs perfected in Oregon, comes next. The two he thinks are the most beautiful of all the orchids of New England.

Forestry Notions.—General J. S. Brisbin, in a work on "Trees and Tree planting," states "that others say," a desert may be reclaimed by first planting its belt with trees. Then rain falls on these trees. By adding to the planted belt from time to time rain will fall on the whole desert in time ; and this is called the "science" of forestry. It is a great pity that such charlatanry should get so much respect. Trees are the result, and not the cause, of climatic conditions.

Maltese Honey.—The honey of the Malta bees is noted for its purity and delicious flavor. This is due to the extensive crop of *sulla* (clover), from which the bees extract most of their honey. Some one has estimated that to collect one pound of honey from clover 62,000 heads of this flower must be examined, and 3,750,000 visits must be made by the bees.

The Wild Beet.—Probably few vegetables have been developed to such a remarkable degree as the beet. The writer has gathered it along the shores of the south of Europe without finding the slightest trace of succulency in the root. Its development to the extent we find it in modern gardens is extremely remarkable.

The Walking Fern.—Mr. John K. Goodrich finds a locality for the Walking Fern on the Naugatucket river near Waterbury—*Asplenium viride* being a companion to it.

GENERAL GARDENING.

SUNNY ITALY.

Could nature's bounty satisfy the breast,
The sons of Italy were surely blest,
Whatever fruits in different climes are found,
They proudly rise, or humbly court the ground;
Whatever blooms in torrid tracts appear,
Whose bright succession decks the varied year ;
Whatever sweets salute the northern sky
With vernal lives, that blossoms but to die ;
These here disporting own the kindred soil,
Nor ask luxuriance from the planter's toil ;
While sea-born gales their gelid wings expand
To winnow fragrance round the smiling land.

Oliver Goldsmith.

Coal Oil as a Protection Against Insects.—It has long been known that oil is one of the best agents to be employed in the destruction of insects, but unfortunately the best methods of using it have never been drawn out to a fine point. Insects mostly breathe through pores, and the oil closing these pores suffocates the insects ; but if used in its full strength oil will, at the same time, close the breathing pores of the plant, and be just as destructive to one as to the other. About one-half a wine glass of oil, with a gallon of rain water, is the quantity recommended for the destruction of such insects as red spider, thrips and aphis. To mix the water and oil it has to be boiled with soap, in the proportion of about one part of soap and eight of water. When the mixture of soap and water is near the boiling point it is poured into bottles and the oil added at that time. The nearer the liquid is to the boiling point at the time the oil is applied the better it will mix. Corked in bottles it can be kept for use. It is said that many of the insecticides advertised for amateur flower growers are made in this way,—preparations being occasionally varied,—and where it can be bought cheaply it is often better to get it in that way than to go to the trouble of making it oneself. Sometimes the material obtained in this way may be diluted further by water, but it is impossible to give exact directions in these cases. Those who try them must watch results and learn a little from their own experience.

Root Fungus.—Intelligent raisers of trees and plants must be familiar with the work of root fungus, and with its effects on the foliage. In most cases the result is to turn the leaves from deep green to a golden yellow, as in the Peach, the Norway Spruce, and the White Pine. In the Carnation the glacous gray green is changed to a sea green, and so on with other things. The rapidity with which the mycelium, or "spawn," as gardeners term it, travels under ground is wonderful. In a bed of carnations planted out in early spring for removal in the fall to the carnation house, the writer saw a circle containing a few less than 100 plants infected, and which lot had to be rejected.

This fungus had started from some half rotten wood, and then had radiated some fifteen feet to the circumference of the circle infesting every carnation root in its march, and this fifteen feet had been all developed in four months, certainly, and probably much less judging by the fact that the leaf tint had all been completely changed. Just how the change is effected so as to give the yellows to the Peach, Spruce, Pine, and other plants, is not known. No trace of the original fungus can be found in the woody structure,—yet the wood impregnated with some deleterious substance, is capable of carrying the disease to other plants by inoculation. But the fact remains that root fungus is the primary cause.

Growth of the White Pine.—In reference to the rapid growth of the White Pine in New England, noticed at page 75, Mr. Robert Douglas kindly states that, as one year seedlings barely reach an inch in height, and in three years are no larger than lead pencils, he thinks that a tree seven feet in diameter could not be obtained in thirty-one years. He would give it three times thirty to reach that dimension. Just how theses errors occur it is very hard to say, but they detract very much from the value of forestry literature.

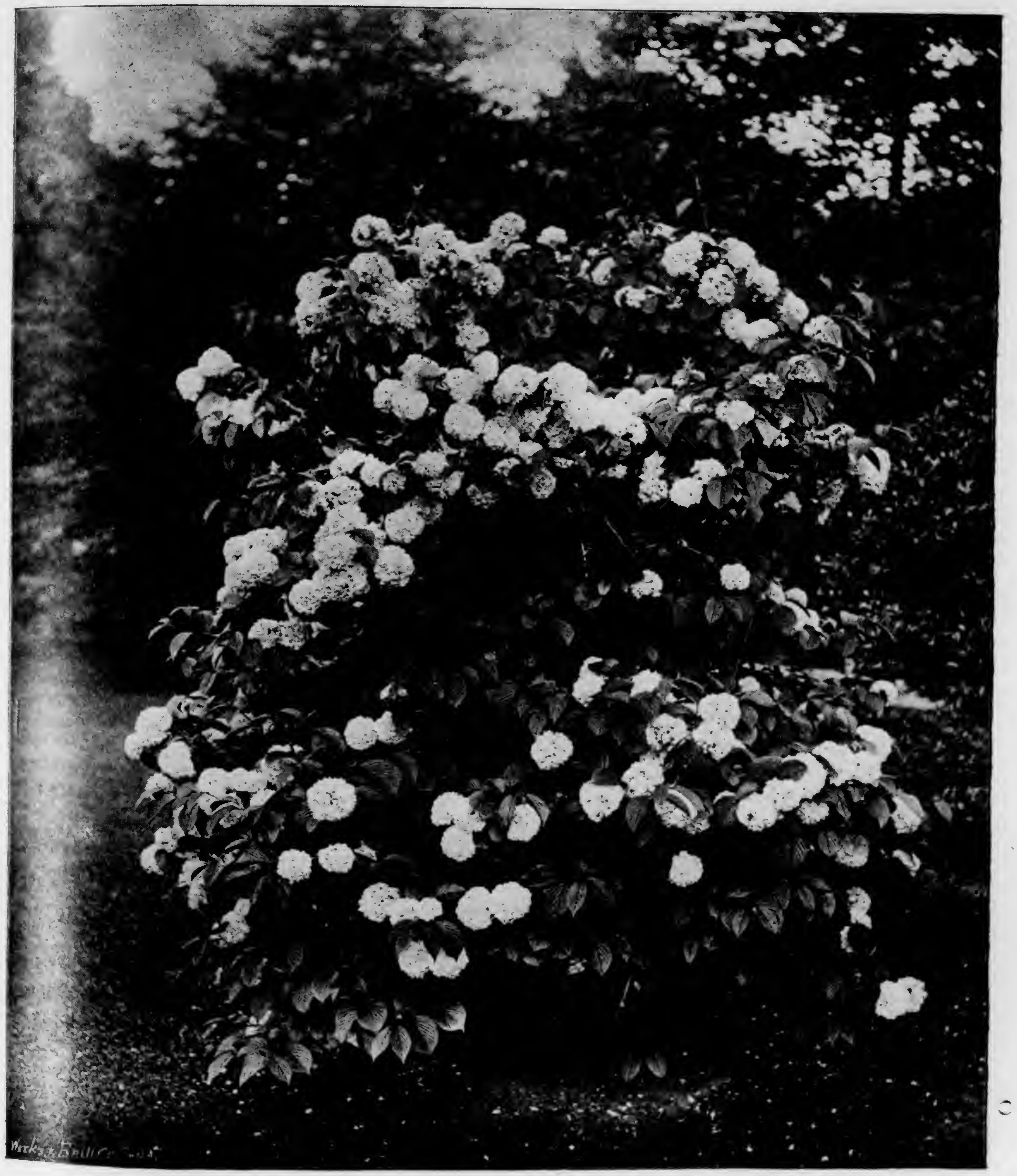
JAPAN SNOWBALLS—*Viburnum Plicatum.*—Few hardy shrubs have pushed their way so rapidly to wide popularity as the Japan Snowball, and though much has been said and written about it, inquiries show that much more has to be told. It has not only held its own as one of the most valuable floral ornaments of our gardens, but enters largely into florists' sales in the demand for cut flowers. The original species was long ago described by Thunberg as *Viburnum plicatum*. The variety is known in botanical work as *V. plicatum plenum*, the specific name from the singularly plaited leaves which give the plant great interest even when not in blossom. Even two-year old plants flower, but it takes a strong five-year old to produce the effect of the one given in the illustration on the opposite page.

The flowers are all barren, the variety being a sport from the normal form propagated in Japanese gardens. It was introduced from Japan by Fortune, the English botanical collector, about fifty years ago; but has only in comparatively recent times become abundant enough for cheap popular planting.

BEAUTIFYING THE WASTE PLACES. — It is said that few farmers have any great taste for gardening, that farming is simply a mere question of getting the most out of the ground that is possible, in other words, it is a business in which money-making rules supreme. This is a very good principle to take as the basis of successful farming, yet beauty never does any harm, even in connection with the solid facts and figures of business, especially when it can be accomplished without the expenditure of much cash. Pennsylvania is a State famous for its number of springs,—there is scarcely a farm in the whole of its wide territory but has a spring of water somewhere about it, and the original settlers endeavored, as far as practicable, to build their houses near these springs, over the outlets of which they erected what are known as spring houses, in which the various operations of the dairy were conducted. In passing through a portion of Pennsylvania recently, the writer was interested in noting that in a case where the pathway had to be cut several yards through the surrounding earth to get to the spring, on account of its being some feet below the surface of the earth, the little embankment formed by this cut, was thickly studded with large stones or rocks, and in among these rocks were set native ferns, evidently collected from the woods in the locality. To prepare this could scarcely have occupied more than a day, and yet the result was as the poet would say, "A thing of beauty," which was certainly, "a joy forever." There is no reason why these little evidences of superior taste in the owner of a farm might not be much more extensively exhibited than they evidently are.

PHILOSOPHY OF DRAINAGE.—Few cultivators understand how water operates in soil culture. One of its chief uses is to purify the soil. The roots of plants require the agency of oxygen in preparing food, just as much as the leaves do; and after the air has lost its oxygen it is impure and unfit for the use of the plant. A heavy fall of rain completely saturates the soil and drives out the impure air, and as this water passes away a new supply of air follows. In no other way can the soil be rendered free of impure air than by this curious process of nature. In brief, rain is a purifier of the earth. Of course the soil retains moisture, and from this moisture the roots subsequently are enabled to draw their supply. This is necessary, but air is no less necessary than the water. One of the most interesting treatises on the subject, and by which this paragraph has been suggested, is an essay, delivered before the Marion County Horticultural Society of Salem, Oregon, by President John M. Bloss, of the State Agricultural College, and Director of the Agricultural Experiment Station. The Bulletin is sent free to all who think proper to ask for it, — and we could wish nothing better than that every reader of MEEHANS' MONTHLY had a copy for perusal.

COLOR OF FLOWERS.—Blue Roses, or blue Dahlias, at one time thought impossible, and probably still impossible as a natural product, may now be obtained by placing the cut flowers in a solution of analine substances. Indigo carmine produces beautiful blue tints. For a while there was quite a rage for having these artificial colored flowers. Lily of the Valley, Dahlias, Hyacinths, and others being so successfully treated; but this has entirely gone out of use. Except where people wish to try the matter as a simple chemical experiment.



JAPAN SNOWBALL.--SEE P. 120.

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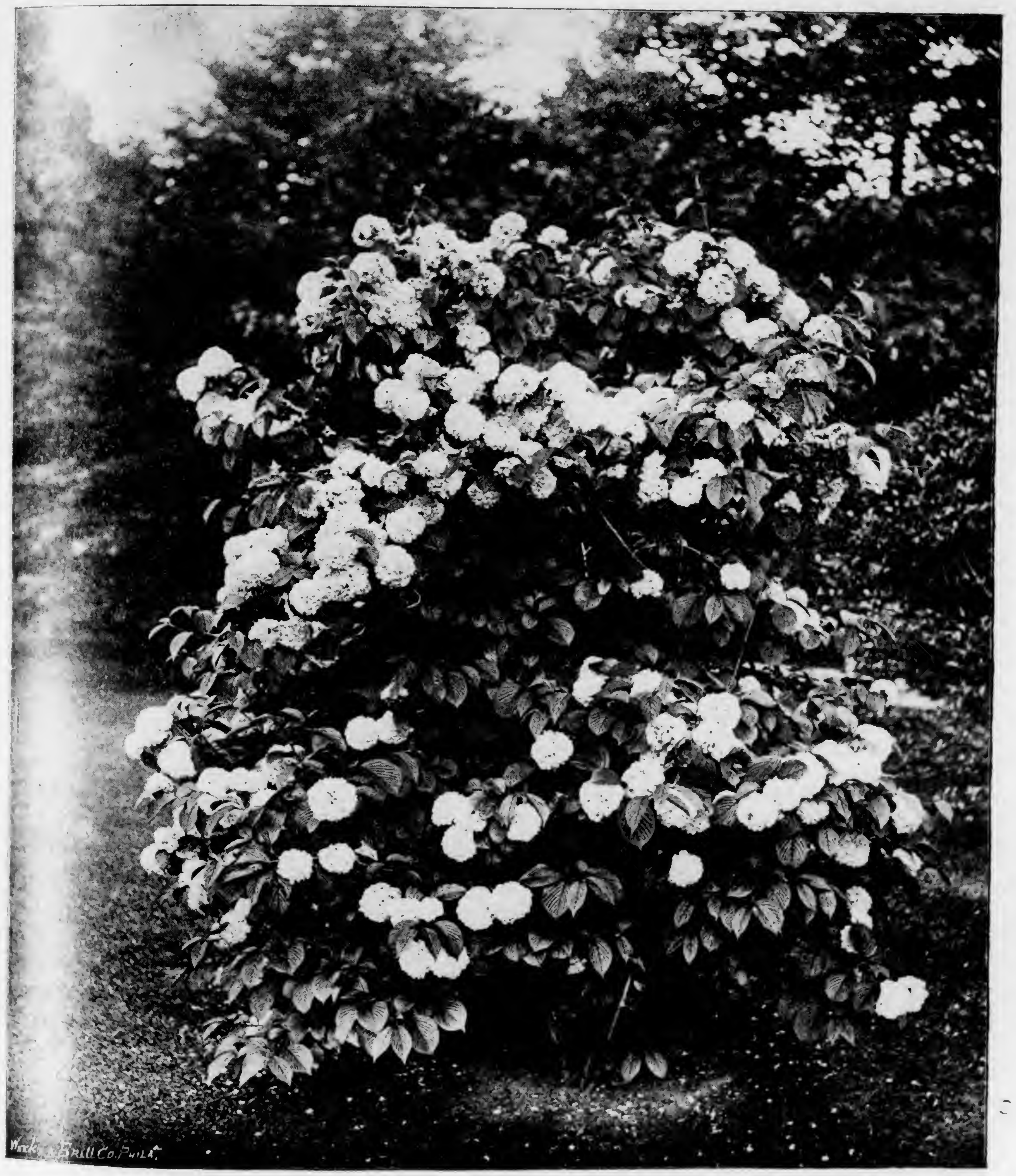
INTENTIONAL SECOND EXPOSURE



JAPAN SNOWBALL.—SEE P. 120

Straightening Crooked Trees. — Mr. Ernest Walker, of New Albany, Indiana, furnishes the following very valuable hints for straightening crooked trees :

" Young trees that are bent or crooked may easily be straightened without cord or stakes, and a good many of them in a short space of time, if it be done in the right season. The right time is *in the spring*, *when the buds are swelling* and until the trees are in full leaf. At this time the trunks are in a degree plastic and incline to remain the way they are bent. All kinds of trees with trunks from a half inch to two and a half inches in diameter may be made to grow straight in this way.

Trees in the nursery row often become leaning, or bent from the direction of prevalent winds, which unless remedied detracts from their market value. Such trees may be straightened at a slight expense, and with great profit by simply bending them forcibly in the opposite direction. The writer had a block of several thousand yearling peach trees several years ago, the trunks of which were all curved from the southwest winds. A man went over the lot in about a half a day, and straightened the trunks. It was an experiment, but proved a very successful and valuable one.

It is not sufficient simply to pull the top over and bend the trunk by one big curve, except in the case of larger trees which cannot be otherwise treated. Where the size of the trunk will admit it the bending should be a succession of forcible short curves along the trunk. If there is any damage done the cells on the short side of the trunk it will be immediately remedied unless the trunk be abruptly broken, which must be guarded against."

Destroying Weeds. — Several correspondents have written to Meehans' Monthly recently, as to how to destroy noxious weeds. Poison Ivy, Dock, Canada Thistle, and Dandelions are the subjects of these varied inquiries. Intelligent gardeners know that no plant can live long without leaves. If, therefore, a plant is cut off to the ground soon after making leaves in Spring, it is generally destroyed at once ; but sometimes another or second growth will appear, of a more or less weak character, and if this is again cut, the plant will surely die. Nothing is easier than to destroy these weeds when this principle is kept in mind. The writer of this paragraph has known a whole half acre of Canada Thistle entirely eradicated by having a boy cut them beneath the ground with a knife early in Spring. Very few shot up leaves the second time, but these were again cut as soon as perceived, and the result was to eventually destroy every plant. It did not cost $10. to do it.

The English Primrose. — Few American flower lovers, familiar with English literature, but have a warm affection for the English primrose, as the primrose of Northern Europe, is called. What are known as Polyanthuses, closely related to the wild forms of English primroses, are included in this thought. As a class they are extremely beautiful, aside from the interest derived from their literary relations. They are extremely subject to attacks of the red spider in a warm, dry climate. Our warm and dry summers are always against their success ; but if planted where they can be shaded from the hot sun in the day time, and yet have some light, by reason of eastern or western walls, or better still, northern exposures, and to be put in soil not allowed to get dry by reason of the incursions of the roots of rapid growing trees, they may be grown in our climate with considerable success.

A Double Gloxinia. — Some cultivated flowers seem to have a much greater tendency to produce double varieties than others : while others, cultivated for many years, rarely exhibit the double flowering tendency. It is said that in England a double Gloxinia has now been produced. As it is over fifty years since they have been in very general cultivation, it is remarkable that it has taken so long a time to produce the double form.

Variation in Nature.—The paragraph in Meehans' Monthly, calling attention to the great variation which may be found in any one species of plant in a state of nature, is interesting a great number of the readers of the magazine. Mrs. Fannie E. Briggs, of Washington State, writes that, "among the native Lily, *Lilium Humboldtii*, flowers usually spotted are on some plants entirely unspotted ; instead of being brown, as is characteristic of the species, the stem is often wholly green."

Classification of Chrysanthemums.—The American Chrysanthemum Society appointed a committee to classify this popular fall blooming flower. In the report before us they have shown how well they have accomplished the task they were appointed to do. One would hardly suppose there could be so many varieties, yet here so many are named and fully described, as to occupy a pamphlet of thirty-seven pages. The officers of the Society are William K. Harris, of Philadelphia, E. J. Hill, Richmond, Ind., Edwin Lonsdale, Chestnut Hill, Philadelphia, and Myron W. Hunt, of Terre Haute, Ind.

Rosa rugosa.—A very beautiful rose, *Rosa Camtschatica* of Ventenat, a native of Russia, as its name implies, has long been cultivated in some few choice American gardens. A few years ago *Rosa rugosa* of Thunberg, a native of Japan, was introduced, but no one saw any difference between the two, and there was a suspicion that in some way the two had been confounded. A French rose grower, Souchet—suggests that the real *R. rugosa* has stipules and bracts comparatively undeveloped, while the *R. Camtschatica* has them very large. It is said that a pure white variety of the latter, perfectly double, has been produced in France.

Pea Weevil.—Many remedies have been given for the destruction of the little weevil which bores holes in peas. No one cares to sow such and introduce the insect at the same time. Mr. James Fletcher, of the Experimental Farm, of Toronto, states that peas are just as good two years old as when but one year. He found two year seed all grew. The insect will not live that long, so that those who may not care to introduce the pea weevil with any particular variety, have only to hold them over for a couple of years, in order to have them certainly clear of this trouble.

Watering Cactuses.—Mrs. Frederick Johnson, noting a visit to the Cactus House in the Missouri Botanical Gardens at St. Louis, remarks that they are only watered once in three months. This used to be the rule in old times, but the practice has been changed more recently. These are probably watered oftener than is supposed. Cactuses do not dislike water if the pots are well drained.

FRUITS AND VEGETABLES.

The Bloodgood Pear. — An intelligent contemporary, the "Florida Fruit Grower," replete with valuable suggestions, remarks that the Bloodgood pear is superior in quality to the Bartlett, but is not considered profitable by the grower of pears for market, because of its lack of attractiveness. This can scarcely be a reason why the Bloodgood pear, is not generally grown for market, for among this class of fruits, as well as among apples, numerous varieties remarkably lacking in attractiveness, are extremely popular. Who would, for instance, see anything particularly attractive about the Rhode Island Greening Apple ? There are scores of varieties considerably more attractive, and yet are not grown. In relation to the Bloodgood pear in the Eastern States, it has rarely been considered as of even second quality, to say nothing of first. If it is so superior in quality in Florida, it must be a case often noted, wherein varieties of no reputation in one locality, will get to the head of the list under other circumstances.

Apple Orchards in Iowa. — Mr. H. W. Lathrop, of Iowa City, states that the first apple orchards were planted in Iowa between 1799 and 1802. He thinks that if successive generations from these trees had been carefully selected, some very hardy varieties might have been by this time obtained. This is quite likely. Though environment has not much to do, in the opinion of some botanists, with any very material changes in the form and general characters of plants, it is believed that hardiness is achieved by successive generations of comparatively tender plants grown in severe climates.

Crops of Currants.—A European paper states that one currant bush there produced 17½ pounds, which was thought to be something extraordinary. It strikes us that at least as great a weight of fruit has sometime been produced from American bushes, but we have no positive knowledge, and shall be glad to have a note from some one who has made a positive test. At Haywards, in California, we have certainly seen bushes that must have had a weight of fruit approaching these figures at any rate.

Growing Peaches in Pots. — One of the prettiest sights in ornamental gardening is a house for forcing fruits. It is not generally known that fruit trees can be raised in pots pretty nearly as well as oranges or lemons,—and aside from the beauty of a house filled with ripe fruit, is the satisfaction of having first class fruit for the dessert table. One of the most successful of these fruit houses, which but a few years ago the writer had the pleasure of seeing, is on the grounds of the Hon. J. D. Cameron, United States Senator, near Harrisburg. The sketch given with this paragraph, illustrates how easily peaches can be grown in this way, and how handsome they must look when in perfection. Notwithstanding the ease with which fruit can be transported from southern regions to more northern ones, forced peaches can be had before the earliest southern crops are ready.

PEACHES IN POTS.

The Morell. — In a former number of Meehans' Monthly surprise was expressed that the Morell was not more frequently met with in America and more generally used. This paragraph attracted the attention of Mr. Isaac Shepardson, a good neighbor of the conductors of this magazine, who reports that they have been as long as he can remember, frequently found under apple trees during apple blossom time, and to confirm his statement brought a fine basket of them during the June month. They were prepared as a test with the common mushroom and in the same way, and a large number of those who participated in the feast regarded them as far more delicious than the ordinary mushroom, and especially when prepared as a gravy. It seems remarkable, considering the excellence of this species of the mushroom tribe, that the spawn has not been prepared and offered for sale in markets, just as the spawn of the common mushroom is. Possibly it will not bear such treatment, but then no record has been made of any experiment on the contrary.

The Peach Tree Borer.—Many remedies are given for the destruction of the peach borer. It seems wiser to keep the insect out than the worry so much about it after it has obtained possession of the tree.

Any kind of greasy matter applied to the base of the tree will keep the borer away. The best thing that we know of, is wheel grease, made up with various fats in connection with pine tar; pine tar alone has been found efficacious, but the danger is from its being confused with gas tar by fruit growers not well informed. Gas tar is very liable to destroy the tree. So far as we know, pine tar has not been found injurious. What is true of the peach is true of all trees that are liable to be affected by the borer near the ground; the apple and quince being particularly in mind as this paragraph is being written.

Large Watermelons. — The season will soon come around when the amateur horticulturist will be twitting his neighbor on the superior products of his garden. Who has the largest watermelon is one of the questions frequently coming up in this friendly rivalry. In California last year, Mrs. Henderson, of Chula Vista, boasted of one weighing 113½ pounds. The Eastern States can scarcely equal this.

The House by the Medlar Tree. — A book by this title has recently been translated into English from the German, by a New York publishing house.

Several friends inquire what is a Medlar Tree? This is a common garden fruit in Northern Germany, the *Mespilus Germanica* of botanists. It belongs to the same family as the apple, pear, and cherry, but does not thrive well except in rather northern regions. As is the case with our persimmon the fruit is too austere until decay has partially set in. The word decay is not an acceptable one, so the French term "blette" is used. A bletted medlar is fit for use. The Japan Plum of the South is very close to the medlar, it is known as *Mespilus Japonica*.

Mythology of the Apple.—A recent note in Meehans' Monthly on the "Mythology of the Apple Tree," is made the text of a highly interesting paper on the subject by Mr. John J. Janney, before the Columbus Horticultural Society of Ohio. Mr. J. brings together all that has possibly ever been written on the subject, but winds up the paper by the very practical statement that, on a tree of Newtown Pippins, presumably on his own grounds, he gathered no less than sixty-three bushels of perfect apples. Those which dropped to the ground or were imperfect were not counted. This is pretty good for Ohio. We should be glad to know whether this record has ever been reached elsewhere.

The Canker Worm. — Few, except those actually living in districts where this insect abounds, can have any idea of its destructive nature. Orchard trees infested with them look precisely as if burned over. Since the introduction of spraying machines, whereby a solution of Paris green can be easily employed, the insect is not so much feared as formerly. It is one of the most certain remedies that have ever been introduced.

Good Pears. — Although the list of pears has been largely added to by introductions during the past few years, some of the older kinds still lead in popular favor. In a list of six best pears, we would be almost sure to find the names of the Bartlett, Sheldon, Seckel, Lawrence and Howell.

New Strawberries. — In America strawberries rapidly deteriorate, and new varieties continually appear to replace the worn out kinds. Rarely can we find one retaining popular favor for over ten years. In striking contrast is the persistency of varieties in the old world. In a recent issue of the *Lyon Horticole* the kinds recommended for general culture have, some of them been a half century before the public. It seems strange to read of La Constante, British Queen, Wonderful, Jucunda, Duke of Malakoff, Victoria, and similar old kinds, being yet the best strawberries for the French to grow.

The Chili Strawberry.—Along the cooler regions of the Pacific slope, both northwardly and southwardly from the equator, the prevailing species of strawberry is *F. Chiloensis*, or, as it is often written abont, the Chili Strawberry. As the writer has seen it in its native localities, it is a much more luxurious grower than our breed from the Virginia Scarlet. It appears from a note in the *American Garden*, that the South Americans have improved it as we have our kind, and in the Copiapo Valley in Chili, the correspondent found kinds six inches in circumference, growing in gardens.

Resistant Grape Vines.—The Phylloxera is an American insect, but does not injure the American vine, as it does the European. Hence there is not so much concern in American vineyards when the insect appears on the roots as in European vineyards. These American vines are called "resistants" by those who grow the foreign grape. These are grafted on American or "resistant" stocks.

Currants and Gooseberries —These are very easily raised from cuttings. Lengths of about five or six inches are usually employed. They need to be buried about two-thirds their length in the open ground. If cut a week or two before using, and packed in moss slightly damp, they root much more rapidly when placed in the ground than if put in at once on cutting. Partial shade is an advantage.

The Best Currants.—*Orchard and Garden* has come to the conclusion that after all the introductions of late years, the best currant for the amateur to grow is the White Grape.

BIOGRAPHY AND LITERATURE.

THE WANDERER'S NIGHT SONG.

FROM GŒTHE: BY THOS. CONRAD PORTER.

[This beatiful lyric was written at night upon the wall of a little hermitage on the Kickelhahn, a hill in the forest sf Ilmenau, where the poet composed the last act of his Iphigenia.]

Ueber allen Gipfeln
Ist Ruh;
In allen Wipfeln
Spürest du
Kaum einen Hauch;
Die Vögelein schweigen im Walde;
Warte nur, balde
Ruhest du auch.

Over all the hill-tops
Quiet reigns now;
In all the tree-tops
Scarce stirs a bough
By Zephyr caressed;
Ceased in the grove has the little bird's song;
Wait! and ere long
Thou too shall rest.

POTASH IN AGRICULTURE. — A very useful and suggestive essay on "Potash in Agriculture" has been issued by Dr. B. Von Herff, 99 Nassau street, New York. There is one quotation from Prof. J. B. Smith, of the Department of Agriculture at Washington, which we think must be a misquotation. Surely, Prof. Smith never said that "Many a New Jersey peach orchard has recovered from an attack of the yellows after a free application of Kainit"—kainit being a form of potash. It is a prevalent belief, and a belief probably impregnable against any attack, that when once a peach tree has an attack of yellows it cannot be preserved by anything known. The wood is changed in character by the disease and never returns to a normal state. It must be remembered in connection with the potash question, that almost all soil which is derived from the disintegration of granite rock contains natural potash, and that this potash, when stable manure is applied to it, makes one of the most fertile of soils. But there are different results by different methods of treating the soil itself. Different combinations of materials will produce different results. Land may indeed be sterile from too much potash. It is sometimes so sterile by an oversupply of decayed feldspar, which is a form of potash, that nothing but the common mullein will grow in it. It is not uncommon to find parties ignorant of this fact apply special fertilizers, containing potash, to such soils with absolutely no result at all. A knowledge of what is in the ground before we apply other materials to it, helps wonderfully in the success of practical operations.

JOHN BARTRAM.—It appears that Bartram, like many other famous men, was not merely interested in botany, but in every good work that had relation to humanity. His name appears among the contributors to the first subscription library in the State of Pennsylvania, in the borough of Darby, and which was established on the 10th of March, 1743. He had, as his correspondence shows, many varied interests at heart, and a letter is extant from Jonathan Bonsal, the Secretary of the Library, to Peter Collinson, who was a friend of Bartram, and who it appears had advised Bonsal to correspond with the celebrated Peter Collinson, to purchase some English books to start the library with. Collinson was asked to ship the books to the care of John Bartram. Bonsal writes to Collinson: "Be so good as to get the books lettered on ye backs if that can be done without much trouble or cost, or as many of them as conveniently can be. We also desire thee to send the price of each book purchased." Collinson sent forty-two volumes, among them, as appears in the invoice, "Rawleigh's History of ye World." The Library Company is still in existence, with one of John's descendents, Deborah W. Bartram, Librarian.

JUDGE PETERS.—We regret to learn that this excellent botanist, who discovered the beautiful fern named in his honor, and which was figured in the June number of the magazine, died about three years ago at his home at Moulton, Ala.

A HAND-BOOK OF EVERGREENS.—Mr. T. C. Thurlow expresses a hope that Mr. Hoopes, or some other capable authority will get up a new Book of Evergreens, so that nurserymen could decide what name to adopt. He remarks that firs, spruces, and other common names have become inextricably mixed, and the Latin names also,—that while one authority calls a fir *Picea*, another will call it *Abies*,—and again, others just the reverse. He wonders which of these names will be adopted in MEEHANS' MONTHLY? It is proper to say that in all these cases, MEEHANS' MONTHLY simply adopts the name which is used in what might be termed the latest botanical lexicon or dictionary. If the names of plants are to be changed merely to correspond with views in magazines, no matter how ably and intelligently the subjects may be discussed, there would be no end to the confusion. For the present it is the practice of this magazine to take the great botanical work of Bentham and Hooker as the authority for the names employed, just as it takes Webster or the Century Dictionary as the referee on any other literary question. When this great work, or some other great work in universal use, adopts the many changes suggested, this magazine will follow in line. Any other course would only tend to throw nomenclature into inextricable confusion,—there would be a Babel of names in which no one would understand the other.

APOCRYPHAL STORIES ABOUT PLANTS. — It is said of a large number of plants, that, on their first introduction, they met with difficulties in transportation, when steam and rapid voyages were not known; for instance, there are at least half a dozen accounts of scientific men bringing plants in boxes of earth and sacrificing their own drinking water in order to sustain the plant's life on the long voyages. Among these stories is one regarding the Cedar of Lebanon. It is said that the elder DeCandolle brought a Cedar of Lebanon to Europe in that way; the voyage was prolonged—cedars and passengers were put on a short supply of water — but DeCandolle denied himself and gave his scanty portion to the little tree to save it from perishing. This is the story, similar to that referred to above, about many plants. The oldest Cedar of Lebanon in Europe was, however, planted by DeCandolle more than a century ago, and is supposed to be the oldest one now known in Europe, though the drinking water story has no foundation in fact.

LADIES' TRACES. — These very interesting fall orchids, among the last wild flowers to cheer us before winter comes, get a good word in a recent number of the *American Garden*. Drawings are given of these species, *Spiranthes simplex*, *S. gracilis*, and *S. cernua*. The *American Garden* adopts the modern rendering of "Ladies tresses" for these plants. The old English people who gave the plant its common name, called them ladies "traces," an old word signifying a cord, and of which the word trace, as used in harness, is still significant. It is to be supposed that a ladies trace might be a silken cord, which these flowers much resembled. These flowers might in some respects be suggestive of a curl on the head of some venerable grey-headed dame, but as for a tress, as tresses are generally understood, there is nothing in the flowers to suggest them. At any rate the old English name is Ladies traces, and not tresses.

SCARLET FRUITED ARBUTUS. — A question has been raised as to the plant referred to by Cowper, in the following lines:—

——Glowing bright,
Beneath, the various foliage, widely spreads
The arbutus, and rears his scarlet fruit.

The question naturally arises from our familiarity with the Trailing Arbutus, *Epigæa repens*. Cowper's plant grows indigenously in Europe only on the Lakes of Killarney, and is a small growing ericaceous evergreen, which has large strawberry-like red fruit. Its botanical name is *Arbutus Unedo*. It will stand some frost, and ought to do in some of the Middle States.

ORIGINAL ORCHARDS. — In various parts of the West, they are discussing where the first orchards were planted. In California, at the present time, one of the earliest, if not the earliest, is claimed for the town of Butte. That orchard was planted, it is said, by a Mr. Thresher, in 1852. Some of the pear trees then planted now bear about a thousand pounds per tree annually, at least these are the statements recorded in some of the California newspapers recently.

GENERAL NOTES.

BOTANY FOR BEGINNERS.—Senor Roberto Jaime Berri, Durango, Mexico, thinks MEEHANS' MONTHLY, might do good work in directing students how to study botany in some easier manner than the usual text books do. He refers to the difficulty he had, when in the United States, to determine plants from the works of Asa Gray and others; but these works are not intended so much for beginners, but for those who have already mastered the rudiments of the science. Teachers have among themselves different views as to what is best for beginners. To the writer's mind there is nothing better than enthusiasm in collecting and preserving little specimens of everything seen, whether wild or cultivated, without any regard the first year to getting the names. After a large number have been collected one learns, by comparison, more in a day, than by the early puzzling by books for a long time. The second year, the "text books" referred to, are found, then, to be just the thing.

ODOR FROM CLOSED ROOMS.—In reply to a note in the June issue of MEEHANS' MONTHLY a Providence correspondent says:—

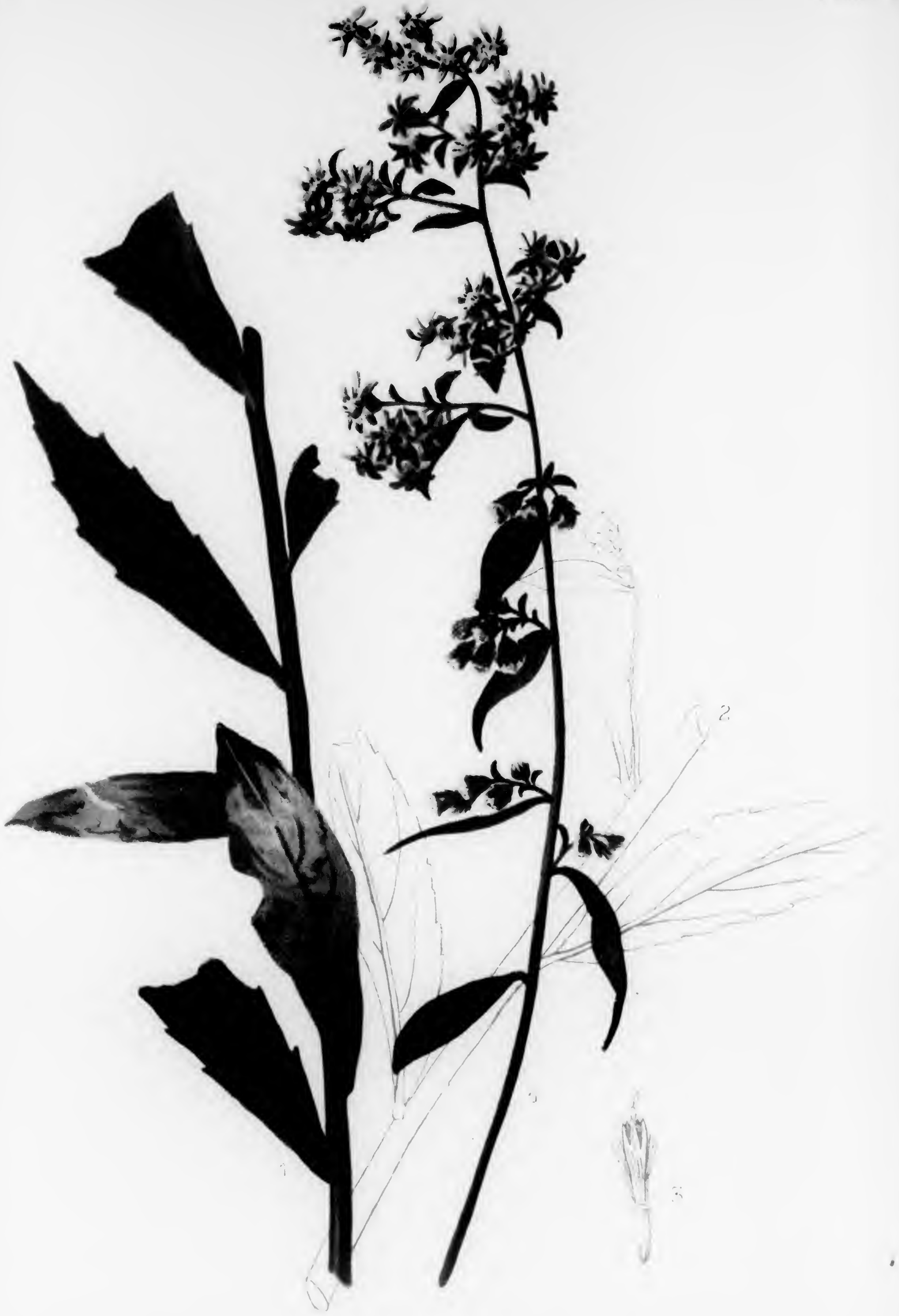
"Perhaps it hardly needs a specialist to account for the odor arising from damp textile fabrics or from closed rooms. It is due in great part to the "size" used in weaving or finishing such fabrics—starch in cotton and glue in woolen. In the weaving of carpets (tapestry and Brussels especially) large quantities of glue are used and often of a low grade. A little dampness under such conditions will easily give rise to unpleasant odors."

HORTICULTURE IN BURLINGTON, IOWA.—It must have been with great regret that one of our correspondents, who has one of the most beautiful suburban residences and grounds near Burlington, should bring herself to write as follows: "I am so fond of this place. I have planted every tree and shrub on it, watching them all grow—but as I and my husband are now left wholly alone, we shall have to let it go. The house is one of Downing's original designs, and in the thirteen years that I have been on it I have had an eye to the planting of everything now growing. As we shall have to give it up, I should so much desire that some good lover of trees and plants would get to be its owner." Should any of our friends desire to settle in that part of the world, we would gladly hand them our correspondent's address.

GOLDEN ROD.—Some one has suggested that the Golden Rod might make "a national flower" because it was distinctly an American genus—very few species being found in other parts of the world. The answer was, "which species of Golden Rod?" for there are numerous. Certainly no plant enters so grandly into the remarkable beauty of American autumn scenery as the numerous Golden Rods,—and the fall season is coming. To help their study a very pretty one—*Solidago petiolaris* will be the subject of the next plate.

LARGE TULIP TREES.—In the writer's own experience, the mountain ranges of Virginia seem to be the home of the tulip tree, at least, if the idea of feeling perfectly at home is an indication of a plant coming under this idea of home life. In the *Garden and Forest*, of June the 8th, a correspondent speaks of a specimen which is nineteen feet in circumference, four feet from the ground. It is probable that no part of the world can show larger tulip trees than West Virginia and Tennessee.

HEALTHFUL GARDENING. — English statistics, recently issued, give the longest average of life to clergymen, but next to them come flower lovers. Gardeners are so nearly equal to clergymen in a long lease of life, that a slight change in the average, would place them at the head of the list. Physicians have the shortest lives of any class in England, probably because they seldom take their own medicines.



SOLIDAGO PETIOLARIS

SOLIDAGO PETIOLARIS.

LATE-FLOWERING GOLDEN ROD.

NATURAL ORDER, COMPOSITÆ.

SOLIDAGO PETIOLARIS, AITON.—Minutely pubescent; stem mostly simple, straight, very leafy; leaves oblong-lanceolate or elliptical, acute, rough on the margins, all but the lowest entire, and nearly sessile; panicle racemose or oblong; heads large, twenty to twenty-five flowered, rays about ten, showy; scales of the involucre linear, pubescent; the outer ones more or less spreading; achenia smoothish. (Chapman's *Flora of the Southern United States*. See also Gray's *Manual of the Northern United States*, and Wood's *Class-Book of Botany*.)

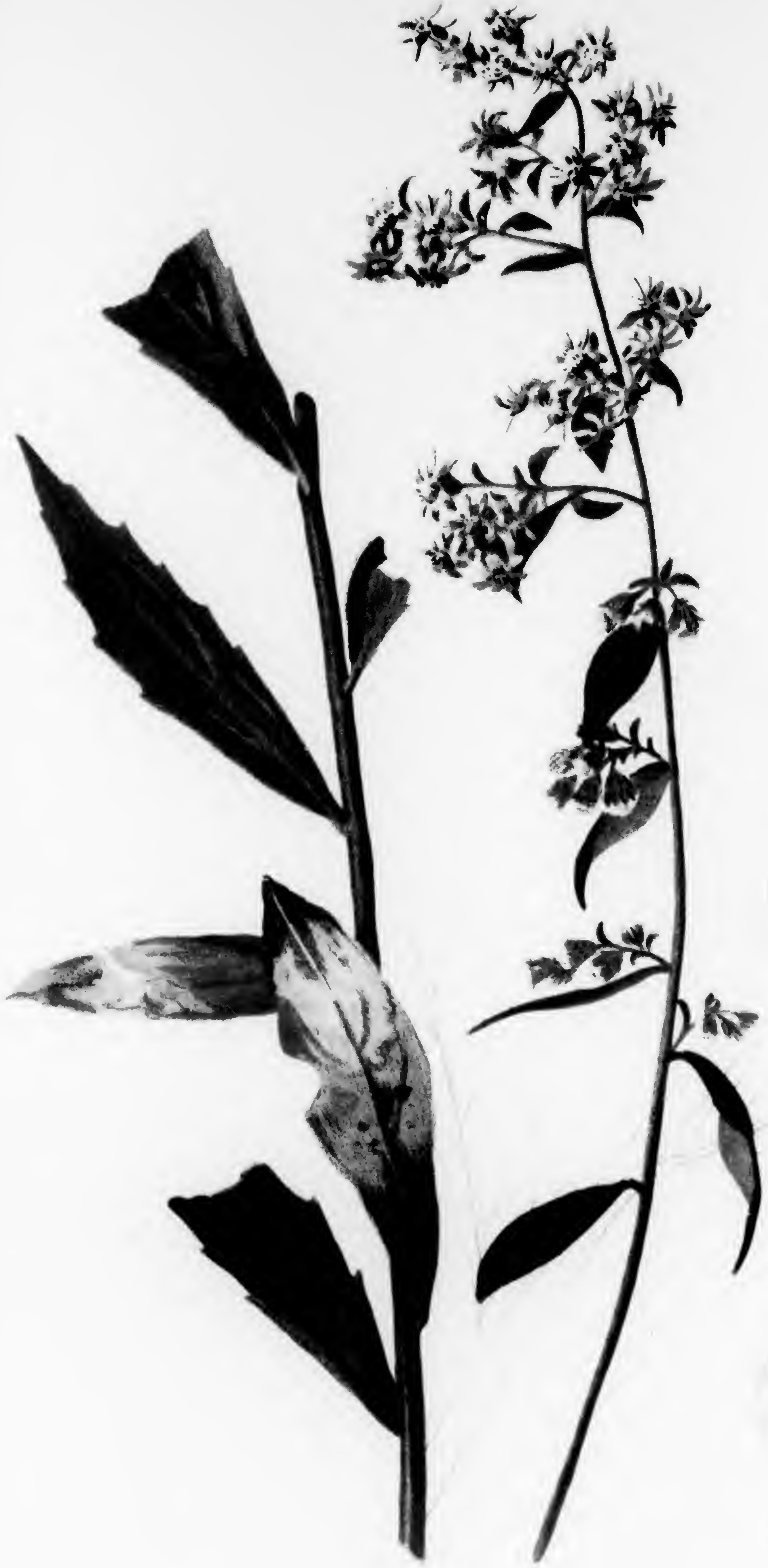
Few American wild flowers are better known than Golden Rods and Asters, as together they play an important part in giving beauty to a rural autumn scene. The number of species of the Golden Rod is very large, and some one or another may be found in every variety of soil and situation. It makes no difference whether we are in the swamp or on the rocky hill-side, by the stream or in dry places, in the woods or out in the open meadow, it will be strange if some species of Golden Rod be not found among all the autumn flowers. Some commence to bloom in September, others continue until November, and very often they are among the last of all flowers to mark the floral year. It is not uncommon to find a Golden Rod in bloom when some trees have been wholly bereft of foliage,—indeed sometimes the wind drifted leaves will gather in small hillocks about the Golden Rods, leaving the spikes of the flowers like little flags flying from the tops of the mounds.

A painting of American autumn scenery would scarcely be complete without the Golden Rod as a leading feature, and there are few American poets who have not offered something in its praise. Bryant's reference to the Golden Rod in his beautiful lines on the "Death of the Flowers" is so well known that it would be almost superfluous to quote them here, only that they are particularly applicable to the one we have now before us, as it is among the latest to flower of this remarkably late flowering class. Bryant is describing a very lonely scene, and says:

"The wind flower and the violet, they perished long ago,
And the wild rose and the orchis died, amid the summer glow;
But on the hill the golden-rod, and the aster in the wood,
And the yellow sunflower by the brook, in autumn beauty stood,
Till fell the frost from the clear cold heaven as falls the plague on men,
And the brightness of their smile was gone, from upland, glade, and glen."

The emblematic poets have also made frequent use of the Golden Rod, and in the language of flowers it is made to stand for "encouragement." But this is apparently derived more from its name than from anything particularly suggested by the flower itself. In ancient mythology the rod, *virga*, was the emblem of power, and particularly of what in these days is popularly called the "one-man power," as a bundle of rods or *fasciculus* was regarded as typical of collective power. A king is generally represented as having in his hand a golden rod or sceptre, and only as he held it towards those who sought an interview with him, were they encouraged to proceed. Thus we read in the Book of Esther, "And it was so when the king saw Esther the queen standing in the court, that she obtained favor in his sight; and the king held out the golden sceptre that was in his hand. So Esther drew near and touched the top of the sceptre."

As already noted, our species, *Solidago petiolaris*, is a late flowering kind. Many years ago, when our native solidagos were not known as they are now, and when only a small portion were grown in European gardens, this received the name of "Late-flowered Golden Rod;" and though some others now known will keep in flower as long as this, it is not worth while to change the popular name. It seems to have been under culture in Europe ever since the middle of the last century. It is recorded as having been grown by Philip



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INTENTIONAL SECOND EXPOSURE

Miller, at Chelsea, near London, in 1758. In the latter part of the last century a calendar of flowers was made up by French monks, in which the date of the first opening of flowers was associated with whatever Saint's day occurred at that time. Our plant, cultivated in their gardens, opened about October 26th, and in that way became dedicated to Saint Evaristus, who is commemorated by the Roman Catholic Church on that day. Evaristus was born in the same city which gave Jesus birth, Bethlehem in Judea, and became Pope just one hundred years after the date fixed for the birth of Christ. During the reign of Trajan he suffered martyrdom on October 26th, 109, the same date on which the "late-flowered Golden Rod" became, with these old observers, a candidate for that frost which "like a pestilence" is soon to take it away. It must be remembered, however, that the time of flowering with such plants as these, depends on the precise locality wherein they are grown. As we have seen the plant is in bloom about the end of October in France. In England Aiton gives from October to December. In our country Chapman, from whom we have taken our description, notes it as only blooming in September in the Southern States, while in Philadelphia a cultivated plant is just going out of flower as November comes in.

The name *petiolaris* signifies having a leaf stalk, but this species has none. Torrey and Gray in the "Flora of North America" remark, "this plant is a native of pine barrens and sandy, usually dry soil, from North Carolina to Georgia, Florida and western Louisiana. The lower leaves are very much narrowed at the base, but very slightly petioled. The extreme forms would seem to belong to different species, but a full suite of specimens furnishes every gradation between them. No species can less deserve the name of *Solidago petiolaris* than this, or at least in its ordinary forms; if the leaves may be said to be petiolate, they are so slightly so, that we believe no author has identified the plant by that character; but as this is certainly the plant described in the *Hortus Kewensis* as well as by Smith, we do not feel at liberty to reject it." Sir James E. Smith, however, says that the leaves of the species he refers to have the leaves "stalked," and grows from "New Jersey to Carolina." Muhlenberg in his catalogue says that the *petiolaris* he refers to "grows in Pennsylvania." Dr. Engelmann has found a form growing so far north as the vicinity of St. Louis,—but in the more eastern States, none that we now recognize as *Solidago petiolaris* have been found northwardly beyond North Carolina,—so that it is likely that the plant now known was not the one originally intended to bear the name—the name, perhaps, became accidentally transferred, But however this may be, botanists do not lay much stress on the meaning of a name. If it be the one originally used with the description, it is generally adopted, whatever the meaning may be.

As already noted in the extract from Torrey and Gray, the species is a very variable one. The form found by Dr. Engelmann near St. Louis is the one we have selected for illustration and is known in botanical works as *Solidago petiolaris* var. *squarrulosa*. This form has the involucral scales with points more spreading than others, or as botanists would say squarrose. Besides this the flower stems seem more branching than other forms. It is the custom, however, in these times to expect variations from an assumed type in all species, and it is scarcely worth while to retain Latin or Greek names for these different forms; but rather to amend the descriptions so that all forms may be included under them.

Most species of Golden Rod have the flowers arranged on one side of the stem, giving the branchlets a wand-like appearance. This species has very little of this character, though occasionally there is a tendency to this arrangement. The heads are individually larger than in most Golden Rods, and the shade of yellow is peculiar among the species of this genus. It bears cultivation remarkably well. Nothing is more interesting in a garden, especially the modern "wild garden," than a collection of Golden Rods. and among them all there is none more conspicuous than our "Late-Flowering Golden Rod," *Solidago petiolaris*.

Botanists usually dread the study of Golden Rods. The dividing lines are slight. But nothing is more valuable in the making of a good botanist than a good eye, which Golden Rod studies cultivate. They seem, and they are difficult,—the greater the victory.

EXPLANATIONS OF THE PLATE.—1. Upper portion of a main flowering stem. 2. Lower portion of the same. 3. Enlarged floret. 4. A small branchlet.

WILD FLOWERS AND NATURE.

AN AUTUMN NIGHT.

It was night in autumn, and the moon
Was visible through clouds of opal, laced
With gold and carmine,—such a silent night
As fairies love to dance and revel in,
When winds are hushed, and leaves are still, and waves
Are sleeping on the waters, and the hum
And stir of life reposing.—PERCIVAL.

ELONGATION OF THE TRUNKS OF TREES.—Prof. J. F. Jameson, of Brown University, describing in the New York *Independent* a visit to an old graveyard in Jamestown, Virginia, writes:

"The oldest inscription is that of Hannah Blair, the wife of the Rev. Mr. Blair, a most important man in his time, Commissary of Virginia and founder of old William and Mary College. Her tombstone, dated 1670, originally lay flat upon one of those altar-shaped tombs which are frequent in old Virginia graveyards. But a sycamore tree which has grown up beside it has seized this top slab, and now the stone has become imbedded sidewise and immovably in the trunk of the tree, and has been bodily lifted from its place by the tree's growth."

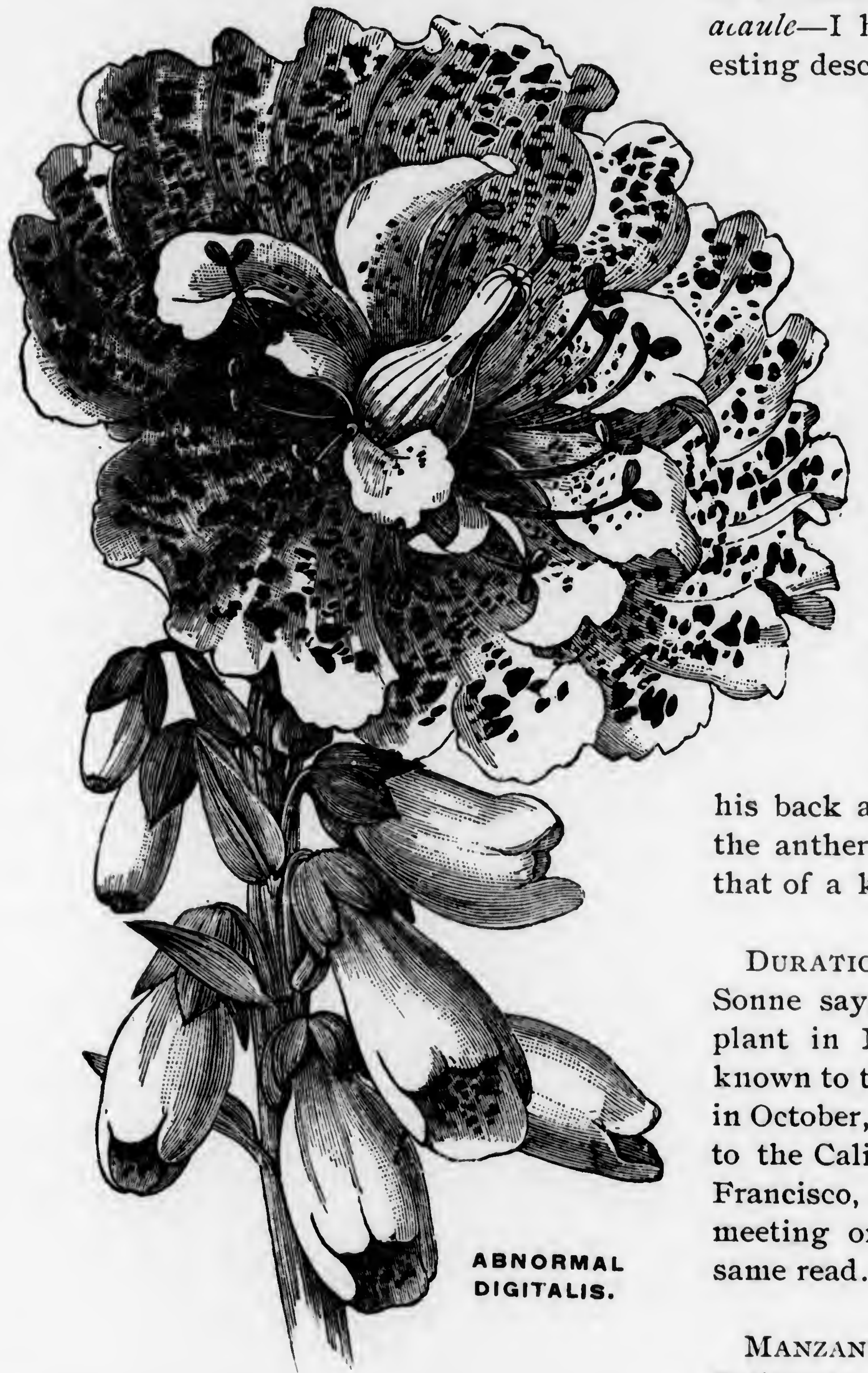
It is just possible that a root, by thickening, has lifted the slab,—but it is impossible that a tree trunk can elongate. The whole interior of a tree is of practically dead wood, the only live wood is on the exterior; granting that live wood might elongate, which from what we know of the manner of formation of the annual growth of wood in the trunk is not admissable, how could the lifeless wood of the interior elongate? Still Dr. Jameson's case is a curious one, and deserves further investigation.

INSECTS IN THE FAR NORTH.—It is a matter of surprise to all who, for the first time, have any experiences in high northern latitudes, to note the great abundance of insect life in Alaska. The writer of this paragraph was especially interested in noting the large amount of larvæ and other low conditions of animal life which was carried down from the melting glaciers into the rivers and streams which flowed from them. It is to this that we have to attribute the great abundance of the higher forms of animal life which prevails. Fish especially are in such quantity near the coast, attracted by this abundance, that it seems like repeating the tales of Baron Munchausen to the listener. The young son of the writer, who was with him in this expedition, was, with a couple of Indians in a boat, able to drive salmon into narrow creeks in such abundance that the boat would be driven against the fish in their endeavors to escape. They could have been dragged up in shoals by any strong and ordinary net. In the earlier history of Colorado very much stress was laid on the fact that Fremont saw a bee on one of the high elevations while crossing the Rocky Mountains. Lieutenant Peary in his recent expedition to north Greenland found a humble bee on the north coast of Greenland —the highest point of land yet reached by a human being so far as known. This explorer states that not only bees but other insects abound as soon as the spring fairly opens. Flowers of many kinds are particularly beautiful and abundant, affording a good chance for honey and pollen-collecting insects to lay up rich stores in advance of their long Arctic winters.

ODOR IN SARRACENIA.—Mr. C. F. Saunders says of odor in Pitcher plants:—

"Referring to your note in the June number about the odor of *Sarracenia flava*, I might mention that I collected a number of the blossoms of *S. purpurea* on Decoration Day, and found them decidedly odoriferous. The perfume was strongest on the day I picked them, but some which are near me as I write this, still retain enough to be quite perceptible. I had never noticed this fact before. The odor was very pleasant in the open air, but proved somewhat rank in the house."

ABNORMAL DIGITALIS.—Mr. W. C. Egan, of Highland Park, Illinois, calls attention to an abnormal form of *Digitalis purpurea*, the common Fox Glove, in the upper flower. At page 50, Vol. I, this remarkable departure from the normal type is figured, and the curious circumstance commented on that what should have been an irregular figure has become regular when it assumed an erect position. Mr. Egan now calls attention to another point then overlooked, that while the inflorescence is usually centrifugal (flowering from the bottom upwards) in this changed condition the upper flower opens first. Observations of this character are of great value in vegetable biology, as giving the clue to mysteries not otherwise solvable. In this case it is clear that the cause for the difference in the order of anthesis lies within the plant itself and in no condition of environment, and thus limits materially the field of inquiry. To explain matters more clearly the cut is reproduced.



ABNORMAL DIGITALIS.

FERTILIZATION OF CYPRIPEDIUM ACAULE.—C. F. Saunders, Philadelphia: "*Cypripedium acaule*—I have just been reading your interesting description of this plant in "The Native Flowers and Ferns," and notice Dr. Gray's supposition that the bees which fertilize these flowers enter one of the lateral openings and make their exit by the other, I might mention that I was fortunate enough this spring to observe an actual operation, which was accomplished somewhat differently from the above. Instead of entering through a lateral opening, the bee butted his way through the cleft in the lip, and after remaining hidden a few seconds appeared at one of the lateral openings, through which he dragged himself with great exertion, and when free, flew gaily off. It was a tight squeeze to get out, and his back after contact with the pollen mass of the anther looked bedraggled and wet, like that of a kitten after a wetting."

DURATION OF THE SNOWPLANT.—Mr. C. F. Sonne says, "that the facts about the snowplant in No. 7 of the MONTHLY have been known to the writer for a number of years, and in October, 1888, he sent a cluster of snowplants to the California Academy of Sciences in San Francisco, and the same was exhibited at the meeting on Nov. 5, 1888, and my note on same read. (See Proceedings)."

MANZANITA.—Mr. C. F. Sonne, Truckee, California, notes that botanists have made two distinct sub-species out of what was originally *Arctostaphylos pungens*, and that the Franktown specimens, recently illustrated, are *Arctostaphylos pungens*, var. *platyphylla*, of Dr. Gray, but Dr. Parry deemed it distinct enough to be considered a full species and named it *Arctostaphylos Manzanita*. Watson saw its distinctness, but mistook it for *A. glauca*.

VARIATION IN THE WILD CARROT.—A correspondent sends a sample in which three umbels are fastened together by their backs on one stem, and the stem itself is channeled like a leaf stalk. There are many things of interest in these wild flowers, if people would only look for them. A distinguished Professor in the Pennsylvania University has recently noted that the wild carrot heads of flowers hang down at various times of the day and at other times of the day are erect. These regular periods occur at the same time daily. No doubt there are many other extremely interesting facts about even such a common thing as the Wild Carrot. Just before Mr. Darwin's death he was interested in the observation that the center flower in the umbel of the Wild Carrot was colored, and that it was also usually infertile,—in this respect having some analogy with birds in which the males are always more highly colored than the females.

THE PIÑON PINE.—It is not generally known that there are two species of Pine which go under this name. The more southern form is *Pinus edulis*, which is abundant in New Mexico, extending into Colorado; the other is *Pinus monophylla*, which is found farther north. The former has generally two leaves in a sheath, although occasionally branches are found on which are two leaves united together so as to form a single leaf. In the northern form, on the other hand, the two leaves are always united,—and thus originates the name "monophylla." A new point has recently been brought to our attention through the kindness of Mrs. Ross Lewers, of Nevada,—namely, that the seeds of the monophylla are larger than the seeds of the southern form.

THE OWL.—Not among the least attractions of the mountains of North Carolina to the yearly increasing number of summer tourists, is the number of owls which exist there and which amuse by their quaint ways. The bird was taken as their emblem by the ancient Athenians; and, as Athens was the great seat of Grecian learning, the owl has been taken as the symbol of learning and wisdom by Atheneums and other scientific institutions. Just why such an ungrammatical creature as this bird which insists on shouting all night "to-whoo, to-whoo," instead of "to whom," should be regarded as a patron of intelligence in a city like Athens is not clear, and the text books of the day tell us nobody knows. But if MEEHANS' MONTHLY may hazard a guess, it came about from the owl being the chief companion of the student who "burnt midnight oil."

The chief article that gave ancient Athens any commercial greatness was the manufacture of olive oil. It would be natural that the learning of which Athens boasted should be represented by the great companion of the midnight oil-burner.

A NORTH CAROLINA OWL.

POGONIA DIVARICATA.—Mr. E. S. Wheeler, of Tryon, N. C., sends some handsome specimens of the rare orchid, *Pogonia divaricata*. He says they are found along hillsides and on hill tops, and usually in company with the Kalmia, which they follow in bloom.

THE WALKING FERN.—Mr. Samuel J. Kirk, of Hartford, Conn., reports finding *Asplenium* (Antigramma) *rhizophyllum* near that city,—and Mr. Joseph Meehan that he gathered it near the famous "Devil's Den" on the Gettysburg battle-field.

Odors in Flowers.—A correspondent, referring to a recent paragraph in Meehans' Monthly, that possibly not ten per cent of all flowers known have any odor, suggests that numbers may have odors perceptible to insects, but which human olfactories cannot recognize. This may or may not be. When reference is made to the odor of flowers, it is to be understood that only such flowers are referred to in which the odor is perceptible to ourselves. Flowers certainly vary in the intensity of their odors, and possibly some may have been overlooked which deserved recognition. It was only during the present year that it was brought to the attention of the writer by a large bunch of *Andromeda racemosa*, that it possessed odor. From the whole bunch a very pleasant fragrance was perceptible.

Food of the Oriole.—This pretty bird is usually classed as wholly insectiverous. The writer has seen orioles drawing honey from flowers, just as the humming bird does. Mrs. William Seliger notes, in the *Hartford Times*, that she has seen them suck nectar from the blossoms of peach trees. This lady is also evidently struck by the reputation which they have of being wholly insectivorous,—for she makes the suggestion that the bird was possibly searching for insects among the blossoms; but she is really right in her first impression. The bird loves honey as well as insect food.

The Down of the Leaves of the Plane Tree.—Mr. G. C. Nealley, of San Diego, Tex., notes that the down which covers the leaves of the Plane tree often floats to a considerable extent in the atmosphere, and when taken into the nostrils affects seriously the mucous membrane of the throat and nose. The foreman in Meehans' Nursery reports that this trouble is frequently complained of by the workmen who have to labor among the trees in the Nursery.

The Ostrich Fern.—Mr. C. J. Wister sends a specimen of that supremely beautiful fern, *Struthiopteris Germanica*, collected near Carversville, Bucks Co., Pennsylvania, which is probably its most southern location. It is a northern fern.

Chionanthus virginica.—It is now well understood that this plant is diœcious. It has been further noticed of late that the fruit-bearing ones have the most insignificant flowers; the showiest blooming ones are of the barren kind. We think this holds true with most diœcious plants. The male flowers in these cases are usually much more brilliant than the female ones. The writer once pointed this out to Mr. Darwin,—as showing a similar law prevailing among plants as is well known to exist among birds and other animals.

Manzanita.—A correction may be overdone, and this seems to have been the case in regard to the Manzanita. Mr. C. F. Sonne, of Truckee, California, kindly helps us:—

"I see that you in the No. 8, just received, say that the name *Manzanita* was applied to the illustration whereas it should have been *Madrona*. The illustration *is a Manzanita*, sure enough, but your mistake is to call the Manzanita *Arbutus Menziesii* instead of *Arctostaphylos Manzanita* Parry."

Halesia diptera.—A correspondent calls attention to the fact of a difference between *Halesia diptera* and *Halesia tetraptera*, that has not before been noted,—namely, that the former does not commence to bloom until a considerable time after *Helesia tetraptera* has gone out of bloom,—and this renders any chance of hybridization between them, as has been sometimes suggested, still more doubtful than some have supposed.

The Piñons of New Mexico.--Alice P. Henderson tells the New York *Independent*, that the greatest inconvenience in traveling many parts of New Mexico, comes from riding through the low bushy masses of Piñon trees—*Pinus edulis*. In her opinion the bushes are "cunningly devised demons," sworn to annoy the traveler in every possible shape.

Asplenium septentrionale.—Among the most unexpected of recent botanical finds is *Asplenium septentrionale*, by Mr. T. S. Brandegee, on the San Pedro Mountains in California. There is much yet to learn about the causes underlying the geographical distribution of plants,—and such discoveries as these help much. The snow-plant he also found there.

GENERAL GARDENING.

BACCHUS AND THE GRAPE.

At the purple close of evening,
Careless Bacchus sleeping lay,—
Pirates, from the coast of Naxos,
Bore him to their deck away:
When the slumb'ring God awakened,
Wond'ring he beheld the deep,
While the Pirates laughing told him,
Boys should ne'er be caught asleep!
Ha! ha! Bacchus!—ha! ha! Bacchus!
Boys should ne'er be caught asleep.

As they jeered green vines kept springing,
Rich as fed by southern gales;
From each plank their broad leaves flinging
Mingling with the cords and sails:
Circling mast and spar, like Beauty
Round the neck of warrior brave;
Whilst the ship, unfit for duty,
Lay all helpless on the wave:
Ha! ha! Bacchus!—ha! ha! Bacchus!
Who's the captor?—who's the slave?

All amazed the Pirates gazing,
Watched the clustering grapes ascend—
To the topmost spar aspiring,
As their richness ne'er would end:
Then the Pirates, lowly kneeling,
Strove to turn the boy-god's frown;
But the ship, like drunkard reeling,
With a sudden shriek went down;
Ha! ha! Bacchus!—ha! ha! Bacchus!
Fathoms deep the traitors drown.

—Charles Swain.

Potash and Peach Yellows.—Mr. B. Von Herff, 93 Nassau street, N. Y., contends that a want of potash in the soil produces frequent and disastrous results to the peach grower. All diseases or any disease troubling the peach grower can be found in soils abounding in potash,—and, moreover, it is so well known that the manifestation known as peach yellows, and similar manifestations in many other trees, are produced by root fungus, that there is no need to call in the lack of any mineral ingredient to account for them.

When it comes to the question of a good fertilizer for the peach, kainit, or potash salts, may take a good place among valuable articles. Anything that may aid in checking fungus growth may be useful aside from fertilizing properties. Kainit may do this. Even boiling water poured freely around the roots of fungus infested trees has been found excellent.

Magnolia hypoleuca.—Professor Sargent says in *Garden and Forest*, that this beautiful species, to which reference was recently made with the figure of the fruit in "Meehans' Monthly, is seen at its best in the damp, rich forests which cover the hills of Yezo, where it sometimes rises to the height of 100 feet, and forms trunks two feet in diameter. It seems to affect, particularly, more northern regions, and is not likely to be adapted to warm localities. Professor Sargent compares it, as we did, in habit with *Magnolia tripetala*. It was first introduced into America by Mr. Thomas Hogg, in 1865, being first propagated in the famous nursery of the Parsons of Flushing. In the same article Professor Sargent describes *Magnolia salicifolia*, which has not yet been introduced into cultivation, unless seeds brought by the Professor should have been successful. This is a small tree—15 to 20 feet high—branches green and slender. Like *Magnolia glauca* the leaves are fragrant when bruised; the flowers have not yet been seen. By the description one would judge that it may be allied to *Magnolia glauca*.

Sweet Scented Azaleas.—Most Azaleas are inodorous. The only species with a very strong and agreeable fragrance is the swamp Azalea, *Azalea viscosa*. The fragrance of this species is so delicious, and so much like that of the famous English Honeysuckle, that the fact has given the name of Honeysuckle to the American Azaleas generally. If we could only get fragrance to the Azaleas of the old world and of Asia, it would give us a race of plants which would probably reach the highest wave of popularity. "Gartenflora," a German horticultural and botanical work of very high order, figures a variety which it calls *Daviesii*, and which is a hybrid between the Chinese *Azalea mollis* and the *Azalea viscosa* before noted, and it is believed that this is the first introduction of a class of sweet scented Azaleas, which will combine the fragrance of our native species with the beauty of the old world forms.

MASSING EVERGREENS.—In parks and large gardens, where some years ago it became fashionable to have huge beds of summer flowers and foliage for a few months and naked earth instead of flowers the rest of the year, necessity taught the usefulness of dwarf evergreens, of various shades, which should have a cheery effect the whole year through. Among the earliest to adopt this improved method of gardening, was Mr. Charles H. Miller, the landscape gardener of Fairmount Park, in Philadelphia, and to whom the great eminence of this beautiful spot, under the good judgment of the Park Commission, is mainly due. One of the most beautiful of these masses is in front of the grand Horticultural Hall, and is shown in the opposite illustration. The tree in the same picture, is a young specimen of the European Plane tree, which is found free from the fungus disease which disfigures its American brother, while the greater tendency to spread its branches, makes it more desirable as a shade tree.

CONTRADICTORY PRINCIPLES OF FORESTRY.—A recent issue of a report on forestry, brings again to mind, and emphasizes the necessity for a National or for an International Board of Science, to whom all questions of scientific import should be referred for consideration and approval—and whose conclusions should be recognized as absolute.

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The writer has no desire to underestimate in anywise the value of recent publications by most talented and most learned authorities, but the time will come when radical changes must be submitted to a higher authority than an individual, however learned, or to an isolated college, no matter how renowned.

The writer believes there should be a Board composed of members of the various learned societies and colleges throughout the country—men of acknowledged ability and scientific reputation in their several branches—to whom all questions of change should be submitted for ratification, and whose decision upon any matter within the scope of its authority should be final and conclusive, and without whose approval, no work of scientific consequence could be accepted as standard.

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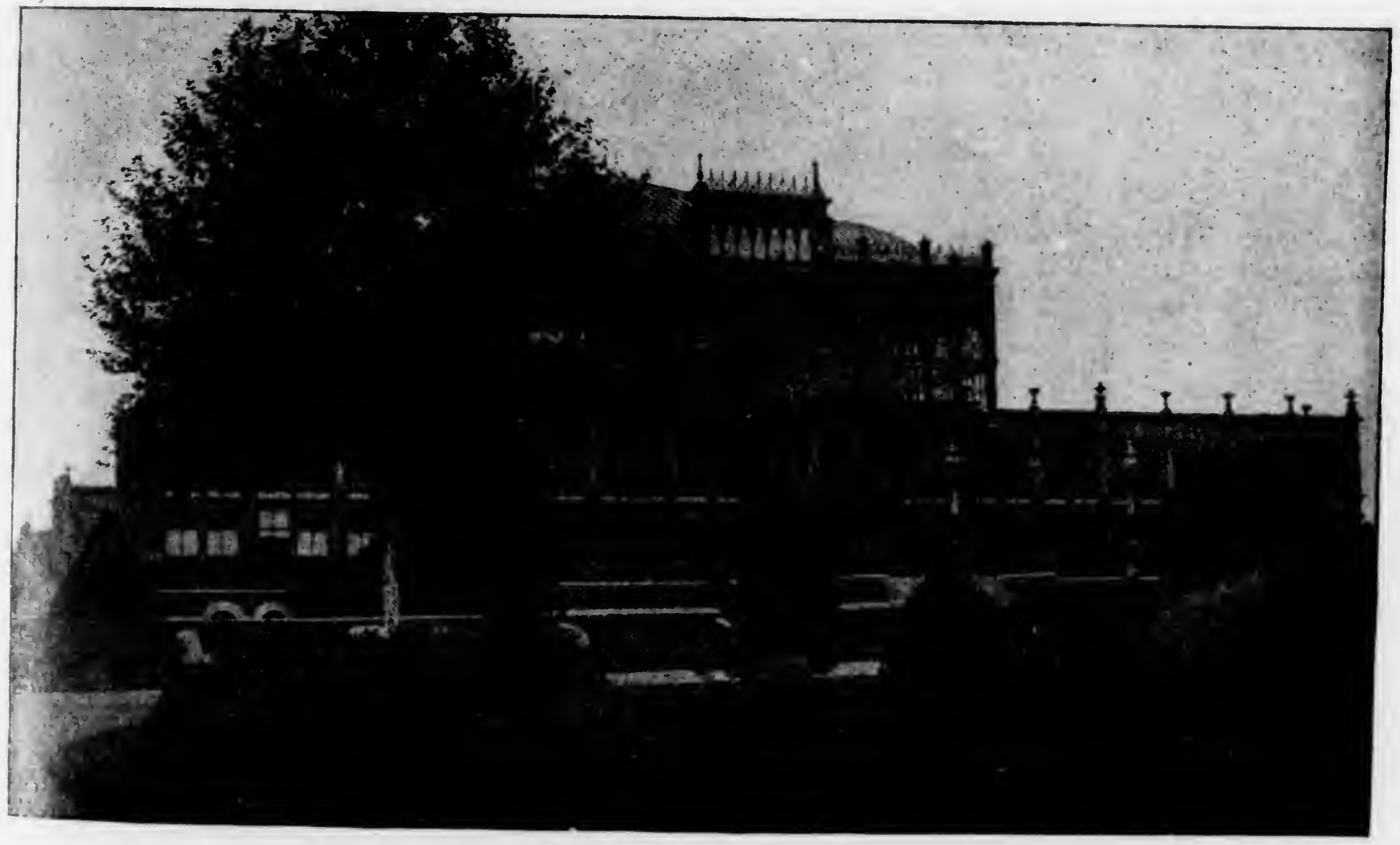

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STREET AND SHADE TREES.—A light booklet, costing only twenty cents, has been issued under this title by the Rural Publishing Co., of New York, prepared by Mr. E. C. Powell, Assistant Editor of *American Gardening*, and Mr. William McMillan, superintendent of the Bushnell Park; these authors' names alone are sufficient to carry weight. Few men understand what they are writing about in these lines better than these horticulturists. It was a great treat to see the illustration of the large tree being transported for planting, with all its roots, instead of the conventional "ball of earth." It is remarkable how long the ball of earth idea has maintained a foothold. Usually the "ball of earth" means all the good roots left in the ground—only the stumps near the trunk being taken away.

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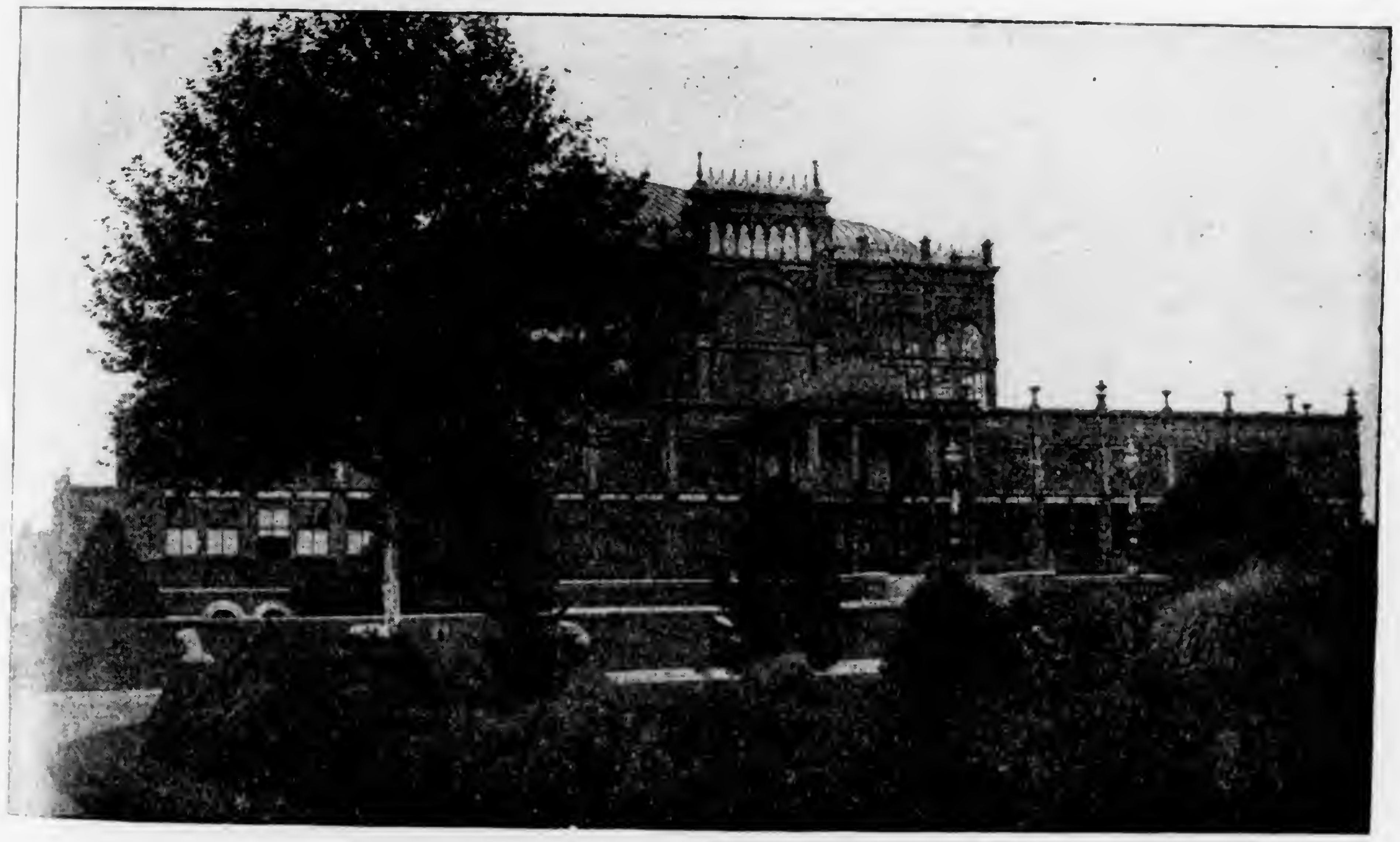

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INTENTIONAL SECOND EXPOSURE

TRANSPLANTING EVERGREENS.—It has become a maxim that evergreens are best set later in the spring than deciduous trees; but this is an error. All trees, whether evergreen or deciduous, require a little time to push out new fibers before they are safe from the shock of transplanting. Trees may, and probably do, absorb a little moisture from the outer surfaces of rough roots, just as a branch would absorb a little when placed as a cutting in water,—but the active drawing of moisture into the tree is only from the points of growing fibers. As these push their way in close contact with the earth, moisture is then absorbed, and an evergreen as well as any other tree must have time to push these new fibers after planting. Planted late in the season there is not sufficient time,—for warm, dry weather makes a draft on the foliage. Indeed, the only reason that could be given in a few words as to why trees die after transplanting is that evaporation of the juices takes place faster than the supply afforded by the roots. It is for this reason that pruning is often advantageous by limiting the evaporating surface,—and so with evergreens, one would gain much more by playing a hose on the plants themselves once or twice a day than by pouring water in around the roots. If the earth is hammered in very hard around the roots, the tree will usually get all of the moisture it requires from that which is naturally in the soil. Pouring in water when there are no fibers to make use of it, is generally worse than useless. When the whole question is seen to be one purely of evaporation, it affords a more valuable lesson than a long treatise on the subject would be likely to give.

PRACTICAL FORESTRY.—Those who know, cannot complain that those who do not know have the leading places in forestry agitation, for they do little to instruct the masses. Once in a while the practical man gets in a useful lesson, and A. R. Whitney, the well known nurseryman, of Franklin Grove, Illinois, has done much good service. That it will take ages to replace our forests is a constant newspaper theme. MEEHANS' MONTHLY has shown that 25 years is abundance of time to get serviceable timber, while 50 years would be enough for a tree to get to its best. Mr. Whitney has a wagon—a strong, substantial farm wagon, made wholly from timber of his own raising.

The construction of the wagon in detail is as follows: Spokes, white oak; front hounds, etc., white ash; two hubs, iron wood; two hubs, apple; axles, rock maple; doubletrees, black cherry; bolster risers, box alder; stake cleats, beech; bottom cleats, American larch; top box cleats, soft maple; end-gate cleats, butternut; felloes, etc., honey locust; insides, etc., black walnut; bottom, European larch; brake slides, red cedar; tongue, etc., chestnut; stakes, etc., osage orange; upper spring bars, willow; bolsters, etc., mulberry; brake bars, etc., red maple; brake posts, black locust; spring bars, rock elm; box cleats, catalpa and red bud; box sides, whitewood.

Which shows that no trashy fast growing tree has been selected to adorn a forestry tale, but that many varied standbys of our forests are all in the same good list.

CURE FOR WARTS.—In almost all country gardens in Pennsylvania, there are patches of the Milkweed, known to botany as *Euphorbia Cyperissias*. It has no particular beauty, and it has been a subject of some interest why it was so universally planted. One friend who inquired was made to believe that it was generally used in the Olden Time, when people used the herbs of the garden for medicine instead of calling in the family physician for every trifling thing. This plant was used to cure warts. It is said that the milk from the broken stem, placed on the surface of the wart will cause it to disappear within a week or two, without pain or suffering. The plant is curious, although not showy, and in the Olden Times curious flowers were planted in gardens as well as those which had an interest solely from their gay color. It may be that the plant had an interest in this line, although, not particularly showy.

THE JAPAN ANEMONE is one of the most beautiful of fall flowers; but about Philadelphia, and possibly elsewhere, it is nearly impossible to keep it, as the Spanish beetles devour the foliage. Clematis, Ranunculus, and all plants to which the anemone is allied, suffer likewise. They can be destroyed by sprinkling the plants with Paris green, though this is not a nice article in a flower garden.

RED SPIDER IN THE OPEN AIR.—In open air culture, during the hot summer season, the Red Spider is as destructive a pest as it is to the grower of plants under glass. Many a cultivator refers to "rust," or "poor soil" appearances on his plants, due really to this pestiferous little insect, as a pocket lens would easily show. Mr. Dunn, a Bakersfield, California, horticulturist, has found spraying with the following mixture, sure death to the creatures:

Three pounds caustic soda or potash, two pounds of sulphur; dissolve in two gallons of water; add 25 pounds of whale-oil soap, and boil until thoroughly dissolved. Add water to make 100 gallons, and spray with it while the mixture is warm.

USES OF PUBLIC SQUARES.—Mr. Edwin C. Jellett makes an excellent suggestion that in all Public Squares provision should be made, especially, to set apart plots for children to play in, and in these plots a notice, instead of the usual one, "Keep off the grass," should be "Adults and pedestrians keep away." It is too much the fashion to look to mere artistic beauties in laying out the squares,—and Mr. Jellett is no doubt correct in his idea that the practical use of these plots by children should be more frequently kept in view. Utility is too frequently sacrificed to mere pictorial beauty.

GROWING CHRYSANTHEMUMS.—In potting plants, broken pots or some other material is used to place over the hole in the bottom of the flower pot, in order that water may pass rapidly away. The best growers of chrysanthemums in the Old World now employ broken bones. These serve as drainage and afford nutrition at the same time.

A NEW DEUTZIA.—From a figure in the "Gardener's Chronicle," *Deutzia parviflora*, this Japan species promises to be as popular as *Deutzia gracilis*. It was brought to the knowledge of Europeans by Prof. Sargent.

PERPETUAL FLOWERING MAGNOLIAS.—Most Magnolias, like summer roses, flower only once a year; but one kind, the *Magnolia purpurea*—again, as in the case of some roses—seems to have a tendency to bloom several times a year.

FRUITS AND VEGETABLES.

THE EVENING PRIMROSE AS A VEGETABLE.—The "Lyon Horticole" has a long and interesting chapter on the great value as a vegetable of the common *Œnothera biennis*, the very common weed known as Evening Primrose. Though introduced, it says, from America as early as 1614, it has only recently been known as a kitchen vegetable. It says that it is becoming wild in France, and is known by the common name of donkey flower. It questions the accepted origin of the name, and contends that the botanical name is rather derived from *onagra* and not, as generally supposed, because the roots exhale the odor of wine. From the shape of its roots it is called in France the leg of St. Anthony. However, it is as a vegetable that we have to do with it. If the seeds are sown as soon as they ripen young plants grow at once, and the plant throws up flower shoots early next year. This is the case with all plants known as biennials; but if we save the seed and sow it in the spring at the same time as we do salsafy, parsnips, and similar biennials, the plants make roots only that season instead of flowers. The author of the paper compares the roots with the salsafy in value. It is stored away for use from November to April. Under good culture, it states, the roots develop to quite a large size. It also states that it is far superior as a vegetable to the recently introduced Stachys from Japan.

ORANGES IN FLORIDA.—The Florida "Palladium" states that non-success in the profitable culture of oranges simply results from ignorance of the proper methods of cultivation. Those who think that all there is to do is to plant trees and let nature take care of them are generally disappointed; but men of diligence and thought, who put intelligence of a practical character into the business, find orange culture quite as profitable as any class of fruit growing in any part of the Union.

VARYING SEASONS FOR FRUIT.—Variations in climate can often be measured by the differences in the ripening of fruit. While in Philadelphia the Bartlett Pear ripens at the end of September, the same variety ripens in many parts of California at midsummer or the middle of June.

Starr Apple.—Mr. Wm. Parry sends Meehans' Monthly a sample of the Starr apple, which came to hand on July 27th. With such an immense list of apples already existing, a new claimant for popularity must give a good reason for a place in the catalogue. The Starr will probably awaken comparison with the White Doctor, a highly appreciated Pennsylvania variety, which in descriptive characteristics it closely resembles. But a good White Doctor of the same date weighs but three ounces, while the Starr has completed its growth at nine and a quarter. In other words it is a full month in advance. Mr. Parry has certainly a good thing in a profitable, early, cooking apple.

English Gooseberries.—It is well known that the English Gooseberry as cultivated in most American gardens, is liable to an attack of mildew which seriously interferes with its successful culture,—the plant finally grows very weak and the fruit rarely comes to perfection; but when grown in a cool situation, or where the soil can be kept cool and fairly moist, it thrives very well. A correspondent tells us that in large cities which have small gardens attached, where the soil is shaded by high walls or other buildings, it does remarkably well, and the fruit is often quite as good in quality as can be produced in the best English garden. It may be said as a city garden fruit, the English gooseberry is a fair success, producing luscious fruit to good perfection, although it requires great care to produce it healthful in large gardens.

A New Forage Plant, *Polygonum Shalinense*.—This, one of the Buckwheat family, introduced into France from Moscow in 1870, has been found a wonderfully productive forage plant—over 178 tons have been produced in a green state from an acre.

Preserving Butter.—When we consider how many hints have been given during the many centuries past for the preservation of fruits, it is remarkable that the present enormous industry in that line had not been invented earlier. It shows the advantage of what is called abstract studies. When by the invention of the microscope it was found that rot and decay were the result of the action of small organisms, and that not even these fungi could develop without atmospheric air, it was the most natural thing in the world that successful canning of fruits should follow,—yet the hint has long ago been given in connection with many things, and especially with the preservation of butter. The old *Gardeners' Monthly* recorded a number of cases where butter had been fished out of wells, where it had dropped from vessels suspended over the water for the sake of the cold temperature. These lumps of butter, in many cases a century old, were found just as fresh and good as the day they were churned. Kept from the atmosphere no parasitic fungus could attack it. Recently butter has been found at the bottom of bogs in the old world. It is believed in some cases to be nearly a thousand years old, and yet entirely fresh and good. These hints.certainly are of great value to the practical person, who desires to see a dollar-and-cent value in every scientific idea.

Crop of Oranges.—At Athens, in Florida, a tree produced 18,000 oranges; at least 7,564 were gathered, packed and shipped from that one tree. We suppose each of these oranges would have weighed half a pound, so that there must have been 4,000 pounds weight for the tree to bear. When we remember that the greater portion of the weight of an orange is water, it seems wonderful where all this liquid can be obtained, as the ground is generally comparatively dry in which the orange tree grows. In bearing, the branches by the enormous weight are borne down considerably, but it is said, after the oranges are gathered, they easily erect themselves again.

Barren Plum Trees.—Professor L. H. Pammel, Ames, Iowa, has confirmed some previous observations that the native American Plum is dimorphic in the sexes, having often flowers in which the stamens and pistils are perfect, and at other times trees which have flowers imperfect. These characteristics of a great many American trees and shrubs are not nearly as frequent among allied species of European trees. It is not a question of culture, as some believe, but simply that the American climate is more favorable to the division of the sexes in flowers than the climate of Europe.

The American Grape Vine in Europe.—Recent advices state that over 40,000 plants of American Grape Vines are to be planted the coming season in Austria. It has been found by experience that the American Grape Vine is not susceptible to injury from the small insect called phylloxera, which has been found so destructive to the European grape as to render grape culture in some parts of the old world a signal failure. Strange to say this insect is a native American, and has been connected with the grape vine from time immemorial; but the stronger rooting character of the American grape renders the injury from it very small. The European grapes are grafted on the American. Possibly in the wine growing countries of the old world the fruit of the American grape may in time be brought into use for wine making there, as it has been here. American wines from American varieties of grapes are now nearly as popular as wines from the European sorts.

Improving the Quality of Fruits.—Nothing is more common, in conventions of fruit growers, than to hear one man say of a certain variety, that it is tasteless and worthless, while the following speaker may laud that variety as one of the highest flavor and best quality. The truth is, that ripening fruit is an art, which is only to be learned by intelligent experience. Some kinds of fruit require to be gathered a little before ripe, in order to produce the highest flavor while others require to be dead ripe on the trees before they are gathered. Again, to get the best quality some require to be ripened in a dark and cool place, while others require a warmer and lighter situation. All this has to be learnt by experience, and one of the pleasures of amateur gardening is to study these points, with the view of the production of the best class of fruit.

The Origin of the Peach.—It has never been clearly ascertained what was the original parent of the peach. It is, however, well known that the peach, the almond, and the nectarine can all be developed, the one from the other; and it is, therefore, reasonable that all had the same origin. It has been supposed that the almond was really the antecedent of the other two. Recently, however, there has been found a wild plant in the north of China, which is considered a good species, and has been named *Amygdalus Davidiana*, and it is believed that this is really the parent of the peach and its allies. All that is known of the peach and almond is that they were in cultivation as garden plants as far back as written history goes.

Agriculture by Law.—Some few years ago, the State of Pennsylvania passed a law looking to the thorough eradication of trees suffering from the peach disease known as the "yellows." It was stated at the last meeting of the State Horticultural Association that all attempts to put this law into practice have proved futile. A correspondent of the *Rural New Yorker* states that this has been the result with the New York law against the disease in the plum and cherry, known as "black knot." It is pronounced a dead letter. Almost every effort to carry on agriculture by law has proved a failure. The only hope in these cases is by the universal dissemination of correct knowledge.

Pears for the West.—Mr. T. T. Lyon, the eminent pomologist, of Michigan, makes up his list of first-class pears for the amateur, as follows: Summer Doyenne, Clapp's Favorite, Bartlett, Sheldon, Howell, Onondaga, Beurre d'Angou, and Lawrence. If one has, however, an eye to profitable pears that are produced in abundance and somewhat showy, he would have Summer Doyenne, Tyson, Sterling, Clapp's Favorite, Beurre d'Angou, Howell, Onondaga, Beurre Bosc, and Lawrence.

Orange Culture.—In the cultivation of fruits in the more northern parts of the Union, girdling is sometimes employed, in order to assist productiveness. Grapes are more frequently treated this way than any other fruit; but even with the grape girdling is not often practiced. In orange culture, however, according to a correspondent of the *Farmer and Fruit Grower*, girdling enters into one of the general practices of good culture. Not only is good production of fruit increased, but it is said the quality is very much improved. In northern grape culture girdling has been found to impair seriously the quality of the fruit.

BIOGRAPHY AND LITERATURE.

THE HEART OF FLOWERS.

I sometimes think that never blows so red
The Rose as where some buried Cæsar bled,
That every Hyacinth the Garden wears
Dropt in her Lap from some once lovely Head.
OMAR KHAYYAM.

MR. J. G. BAKER.—The *Gardeners' Chronicle* of June 24th gives a picture in which this estimable botanist and keeper of the Royal Herbarium at Kew is the prominent feature. He is represented with some Onoclea-like fern on the table before him, about which he is penning notes. The pleasure it gives to see for the first time the facial outlines of one so much beloved is mingled with regret that his hard labors cannot be softened by the use of a fountain pen instead of an old steel one,—and instead of having himself bent down to his work till his body is at a right angle with his legs, and his nose but a few inches from his wrist, some better care for his vital organs have not been provided for. It is well worth some thought and a little expense in improved furniture to add ten or fifteen years to the life of such a useful man as J. G. Baker.

RUSSIAN APPLES.—For all the large number of varieties of hardy apples introduced from Russia, few of them seem to obtain permanent popularity. One of the oldest is the Alexander—a very large and beautiful apple—which although not of the highest flavor, is very popular as a cooking variety. The Duchess of Oldenberg is another which has received considerable favor—and a third might be named, the Tetofsky. Outside of these three, few are known to any extent.

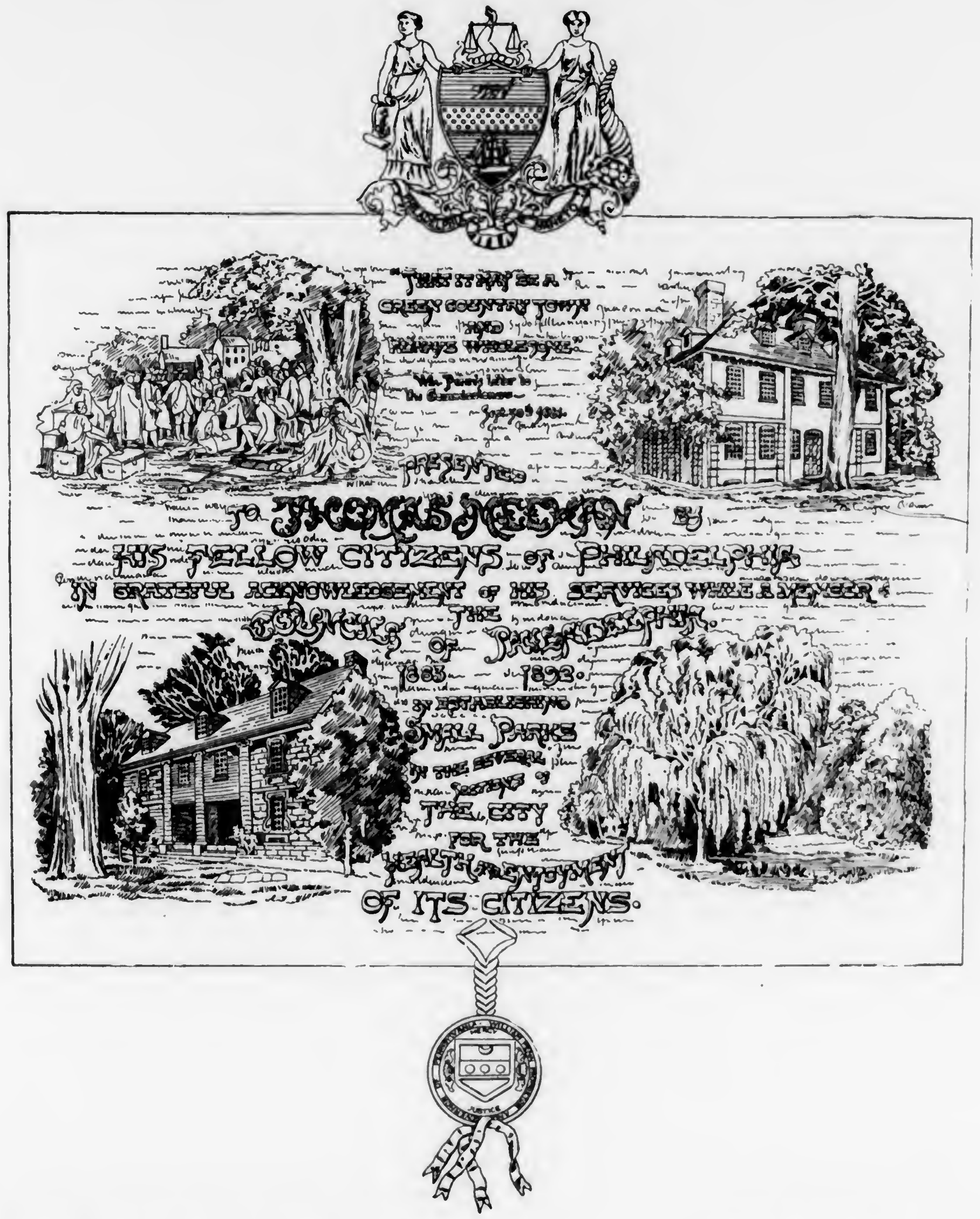
DOUBLE WILD FLOWERS.—Nearly all our double garden varieties of wild flowers were first found wild and transferred to gardens. Double Hepaticas have occasionally been found and are in good collections, but we seldom see them. Dr. Stewart, of Peoria, writes that Prof. Barnhart, of that vicinity, has recently found one double in that section.

MONS. BOURCHARLET.—M. Laurent Bourcharlet, one of the advanced improvers of florists' flowers, and who especially started the great progress made in the Petunia during recent years, died at Lyons, France, on the 14th of May, in his 87th year.

SMALL PARKS IN PHILADELPHIA.—The senior conductor of MEEHANS' MONTHLY, Professor Thomas Meehan, has done somewhat to crystalize and direct a successful movement for small open spaces or parks in Philadelphia, in the City Councils of which he has been for eleven years, and still continues to be a member. On the Fourth of July, in one of the squares he had been especially successful in securing despite a determined fight by some of the best legal talent in Philadelphia, and in the presence of five thousand people, a silver ornament valued at $1,000 was presented to him in behalf of the citizens, in recognition of the services rendered.

Not in the spirit of any "self-praise" on the part of the conductors, but to give the readers of MEEHANS' MONTHLY a view of four of these open places, a representation of the plaque is here given.

On the observers' left hand, lower corner, is Bartram—the house which the great American botanist built with his own hands. Elm Treaty Park, on the upper corner, is a copy of West's famous painting of Penn's Treaty with the Indians, which was made on the spot now the park. Stenton, in the upper right hand, was the home of Logan, an eminent botanist, after whom the genus Logania was named, and who was Secretary of the Commonwealth of Pennsylvania under William Penn. In the lower right hand is represented a view in Vernon Park, the home of the Wisters, but originally settled by Meng, a German banker, and a rare lover of trees and flowers—and also a patron of Kin, an early botanical explorer of our country, whose specimens are still preserved in the Royal Museum at Berlin.



Not the least pleasant thought connected with the subject is the fact, afterward developed, that the prime mover in this beautiful testimonial to Mr. Meehan, was one of the descendants of William Penn, now residing in England.

It may be further explained that the figures on the top represent the arms of the City of Philadelphia, with the Greek words *Philadelphia maneto* for the motto. This is the shortest verse in the Greek Bible, and is translated, "let brotherly love prevail," and from this scriptural phrase, the city derives its name.

The words cut in the solid silver are scarcely legible on the greatly reduced scale of the picture, but are, an extract from the original charter of Penn.

"That it may be a
green country town
and
always wholesome."

—

Presented
To THOMAS MEEHAN by
his fellow citizens of Philadelphia
in grateful acknowledgement of his services
while a member of
COUNCILS OF PHILADELPHIA
1883 in 1892
Establishing
SMALL PARKS
in the several sections
for the
Health and Enjoyment
of its citizens.

GENERAL NOTES.

A Botanical Gardener.—It is one of the misfortunes attendant on improved gardening in our country, that just when a first-class man is required no one knows where to find him. On the other hand when a first-class man is looking for a situation, no one knows where the situations are which require just such services; and opportunities of bringing the two wants together, are not frequent. Just now a rare opportunity offers. An excellent botanist and first-class gardener is Mr. M. Millard, whose address at present is 140 Second Avenue, New York. He is a graduate of the Vienna Botanic Garden, having previously had a thorough course in the Vienna Gardening School and the Pomological Institution,—a combination of advantages rarely met with. These educated gardeners are always welcome to America, and add largely to our reputation. Mr. Millard's services will no doubt soon be sought for, and for which we shall be happy in having assisted.

English Names of Plants.—He jumped from his wheel and entered the Editor's room. "Take a seat," said the Editor, "you look tired." "Not tired," replied the wheelman, "but suffering from an acute attack of kypharis bicyclistarium. I have called to get the name of a pretty flower gathered along the road." "It is a species of Phlox," said the Editor. "A species of what?" he exclaimed. "A species of Phlox." "These confounded Latin names," growled the man of the wheel, "give me its English name?" "I never heard any, Phlox is all I know." "I can't see why there can't be English names. I should have been a botanist long ago but for these hard terms," and the victim of kypharis bicyclistarium mounted his wheel, growling about hard plant names, and trudged up the hill.

"Catalogue of New Creations."—A remarkably unique catalogue is one under the above title, issued by Luther Burbank, of Santa Rosa, California. Mr. Burbank seems to have devoted his life chiefly to the improvement of fruits and flowers. He has been eminently successful in this line, and we have here an illustrated catalogue of fifty-two pages, devoted wholly to the description of the more valuable of his productions. He does not sell them all singly, but offers the whole stock of each kind for sale at prices suited to the character of the new introduction. It is a particularly useful field to occupy, and one in which we believe Mr. Burbank stands alone.

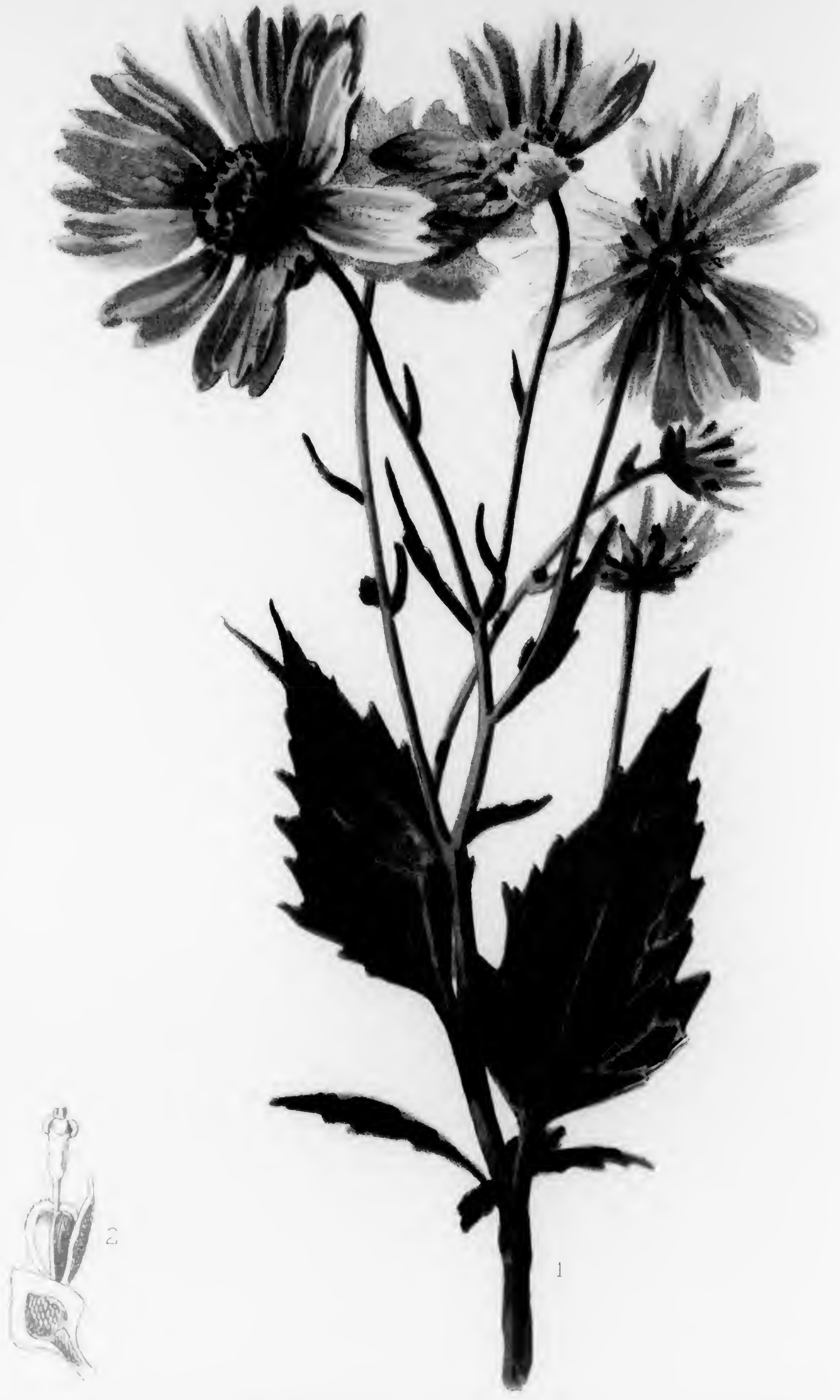
The Philadelphia Small Park Movement.—A daily paper says another of the projected open spaces has been finally secured.

"The city of Philadelphia has taken title from Builder John Meighan to the property at Clearfield and F streets, in the Thirty-third Ward, which is to be known as McPherson square. The lot is about 500 feet square, and cost the city $73,866.67. This ground was originally the property of General McPherson and was called Stouton farm. It was placed on the city plan by ordinance of November 29th, 1890."

Bering Strait.—In reference to a recent allusion to this locality as "Behring's Straits," a correspondent remarks that the United States authorities have restored the original and correct name of Bering,—and that the old plural form "Straits" has given place to the correct one of Strait. The possessive style is also obsolete. Bering Strait and not "Behring's Straits" will come into universal use.

The Next Plate.—The Rocky Mountain region and territory of the Southwest, will claim the attention of the next plate.

Ximenesia enceloides will be illustrated. The fall is especially the season for composites, and this plant will be of interest in the general study of this great order which comprises one-tenth of the whole vegetable kingdom.



XIMENESIA ENCELIOIDES

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XIMENES FLOWER.

NATURAL ORDER, COMPOSITÆ.

XIMENESIA ENCELIOIDES, CAVANILLES.—Annual, cinereous-pubescent ; stems stout, striate, three to five feet high; branched above ; leaves opposite or alternate, ovate, coarsely dentate-serrate, tapering into a long, winged petiole, tripli-nerved, paler beneath ; heads corymbose on long, naked peduncles; achenia of the disk slightly villous, surrounded by a broad wing, emarginate at the summit of the deeply three toothed achenium.—Porter's *Flora of Colorado.*

When in 1817 Rafinesque published his Flora of Louisiana, he predicted that on the basis of some statistics that he had gathered, botanists might expect that "more than 100 new genera and 700 new species will reward their exertions, many of which will be common to Mexico, since Louisiana, lying on the borders of that empire, must, of course, possess a botany partly Mexican, and consequently highly interesting." Since that time "Louisiana" has furnished several States to the Union, and the contiguous "parts of Mexico" have come into our possession ; but still the expression of Rafinesque as to the probability of a Mexican plant wandering into other territory, is particularly suggestive, especially in connection with the plant we now illustrate; for, in all probability, there was a time when this plant would not have been found in any part of what are even now portions of the United States, and that time, too, not in remote generations. It is essentially a Mexican plant, and has travelled northward mainly, perhaps, by the agency of man. In 1840 when Torrey and Gray's Flora of North America appeared, it had already entered this "Territory of Louisiana," for these authors record it as having been found by two collectors, at least it was supposed to have been by recent travellers, for they suggested that it had been "probably introduced."

But after all the question as to whether a plant is truly indigenous or not, need scarcely be considered by a lover of wild flowers,—for there is rarely a plant anywhere but has probably traveled there from some other place, through the ages past,—and it can make little difference in a catalogue of native plants, whether any were carried to one spot from another by the winds or waves, by the feathers of birds or the furs of beasts, or by the incidents of travel between man and man ; yet it is customary in botanical works to make this distinction. Plants which have been carried by human agency, and have been found wild, no matter how widely spread they may be, would be classed as "introduced,"—while a plant found where no human being would be likely to carry it, would be pronounced as "certainly indigenous." The element of time is, however, sometimes considered ; and, if a district has once been thoroughly explored, and afterwards a plant found which could not probably have been overlooked before, it would perhaps be regarded as introduced.

Our present subject, *Ximenesia encelioides*, is an illustration of these various shades of meaning in the term "indigenous." Though now found in Colorado, and southwardly in the dryer portions of the central districts of our country reaching towards Mexico, it is as we have already noted, in all probability, a not very remote wanderer from a southern clime. As, however, it was in these districts when first explored by botanists, it is regarded as indigenous, without regard to where it originally sprung.

It appears to have been first found in 1848 by the naturalists of Emory's expedition from Fort Leavenworth to San Diego, when it was discovered along the Gila River. Others have from time to time found it in various places. Prof. Porter, in the work above cited, records it as having been found abundantly near Cañon City by Mr. Brandegee. The writer of this collected it in 1878, on the Arkansas River, near Pueblo, in Colorado, and it was from these collections that our drawing was made.

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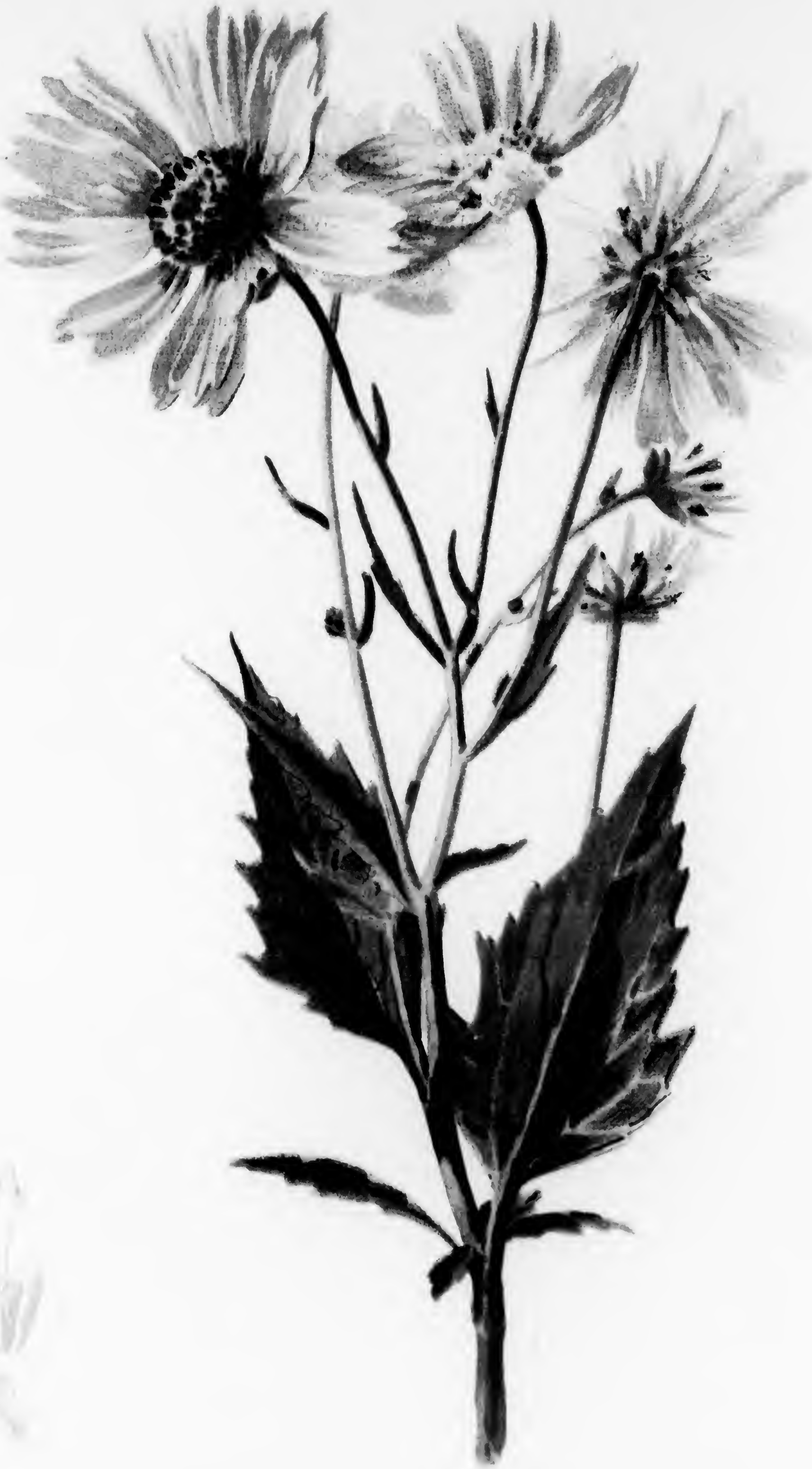

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To the lovers of wild flowers the parts they

INTENTIONAL SECOND EXPOSURE

play in the varying aspects of natuie is a welcome study. In the dryer regions of Colorado these aspects vary remarkably. With the immediate advent of spring appears a fragile but beautiful class, wholly disappearing as summer approaches. Then a totally different appearance is given to the scenery by the warm-weather plants, in the main tall and coarse, but generally keeping character with the dreary and overwhelmingly desolate scenery everywhere around,—till as the autumn comes along, asteraceous plants peculiar to the country appear in many varied forms. In some cases huge torrents in winter bear from the disintegrating mountain sides volumes of debris, which form large banks of diluvium on the lower lands, which vegetation hurries after, doing her best to clothe with floral beauty. Only a few of the coarser plants are equal to this labor of love, and foremost among these is our *Ximenesia*. Where the writer gathered it the feet sunk deeply in the untrodden sand, and there was comparatively nothing growing for a wide extent around on that hot August day but small clumps of this showy yellow flower which, amidst all the desolation, seemed determined to hold on and thrive. It was an admirable lesson to those who love to be taught by flowers.

The purely botanical history of the plant is brief. It appears to have been first known from plants raised from seeds sent from Mexico to the Royal Gardens in Madrid, and supposed to be an *Encelia*. Cavanilles, a famous botanist of Madrid, in his "Genera and Species," published in 1801, tells us the genus differs from *Encelia* in having "fertile ray flowers," and refers to a figure in his "Icones" of a few years before. According to Loudon he named it "after Joseph Ximenes, a Spanish apothecary, who is said to have attended to plants." But his "attentions" appear to have been real, for his biographer tells us he "undertook a flora of Castilla in four volumes, in which he delineated more than 700 plants." There is another genus native to the Southern United States, named by Plumier *Ximenia*, after the celebrated Cardinal Ximenes, of whom it is said that of the great power he wielded, and the immense sums of money he controlled, not one penny was ever diverted from legitimate public uses. Although the orthography of the botanical names is different, being made from the same name, Ximenes, Sir Joseph E. Smith contended this one for Joseph Ximenes should not stand, and in his works the plant is known as *Pallasia serratifolia*; but this view is not adopted by American botanists who still use Cavanilles' name, *Ximenesia*.

Indeed, the practice of American botanists is to professedly make several genera by changing or combining names. Thus we have Grayia and Asa-grayia, both from the late eminent botanist of Cambridge,—Parrya and Parryella, not exactly for the same botanist, but a change of orthography to make different genera of the same name. Botanical science, however, has no more to do with the meaning of the names of plants than one would have with the meaning of any individual's name on a first introduction. As a matter of curiosity, it might be of interest to know how the ancestor of Mr. Smith or Mr. Brown came by his name, but the man's name that meant nothing would be as good for use as the one's that meant much. It is the same with plant names. There have been botanists who have contended that there would be less liability to error if such names meant absolutely nothing at all.

The fertility of the ray flowers will interest the inquiring student. It has recently been noted that where the disk florets are perfect and the ray florets pistillate, the tubular perfect flowers become pistillate only, should these florets become ligulate like the ray florets. This is well known in the case of the Dahlia, Chrysanthemum and similar plants which, under the selective care of the florist, become "double" or wholly ligulate. There is evidently some relation between the sexual characteristics of flowers and the form of the floret, which has an interesting bearing on the whole question of sex in flowers.

The leaves are killed by the first white frost, and this fact is used to certify to its early tropical home. Numbers of species emigrate northwardly, holding their own in their travels by reason of a frost-resisting power in the seeds. If seed can perfect before frost comes, a very tender plant can get far northwardly. The seed remains in the earth till spring.

EXPLANATION OF PLATE.—1. Upper branchlet of a flower stem two feet high, from a Colorado plant. 2. Section of the conical receptacle, with a broadly winged, emarginate akene, with broad chaffy pointed scale at the base, and comparatively small narrow-tubed corolla at the apex.

WILD FLOWERS AND NATURE.

OCTOBER.

Sweet are the woodland notes
That gush melodious at morn from palpitating throats
In anthems fresh as dew! Ay, they are sweet!
But from that dim retreat
Where Evening muses through the pensive hours
There sometimes floats along
A more appealing song:
So, love, thy voice breathes a diviner music in the chill
Of autumn, when the glen is still
And Flora's gold all tarnished on the hill,
Than in the time when merry May calls forth her bashful flowers.

—FLORENCE EARLE COATES,
Lippincott's Magazine.

WHITE ALPINE STRAWBERRIES.—Mr. Ellis B. Noyes sends a box of white fruit of *Fragaria vesca*, the Alpine Strawberry, which he says abounds among the red ones on the hills about Lewistown, in Pennsylvania. White fruiting varieties of the Alpine Strawberry are not uncommon in cultivation, but, on account of the Alpine's love for cool temperatures it is not often met with in strawberry gardens. The fruit is small, and this also is somewhat against their culture, and it is to be regretted, because the flavor of the Alpine is much higher than that of the common red or Virginia Strawberry. In fact, one scarcely can fully appreciate the statement of Sidney Smith that "The Lord could doubtless make a better fruit than the strawberry, but doubtless the Lord never did," unless he had once a taste of a good Alpine. Another interesting feature for the amateur is that they fruit much later, and indeed some of them produce fruit in the fall. Where gardening is followed for the pleasure it affords rather than the profit resulting from sending things to market, no better occupation could be presented than the culture of Alpine Strawberries, and among this the culture of white forms should have a prominent place. By the way, botanists frequently fail to recognize the difference between *Fragaria vesca* as a species, and some forms of *Fragaria Virginiana*; but with a little practice they could be readily distinguished by the plaited leaves and by the fruit, in which the seeds are much more prominent and much more numerous than in the ordinary forms of the scarlet.

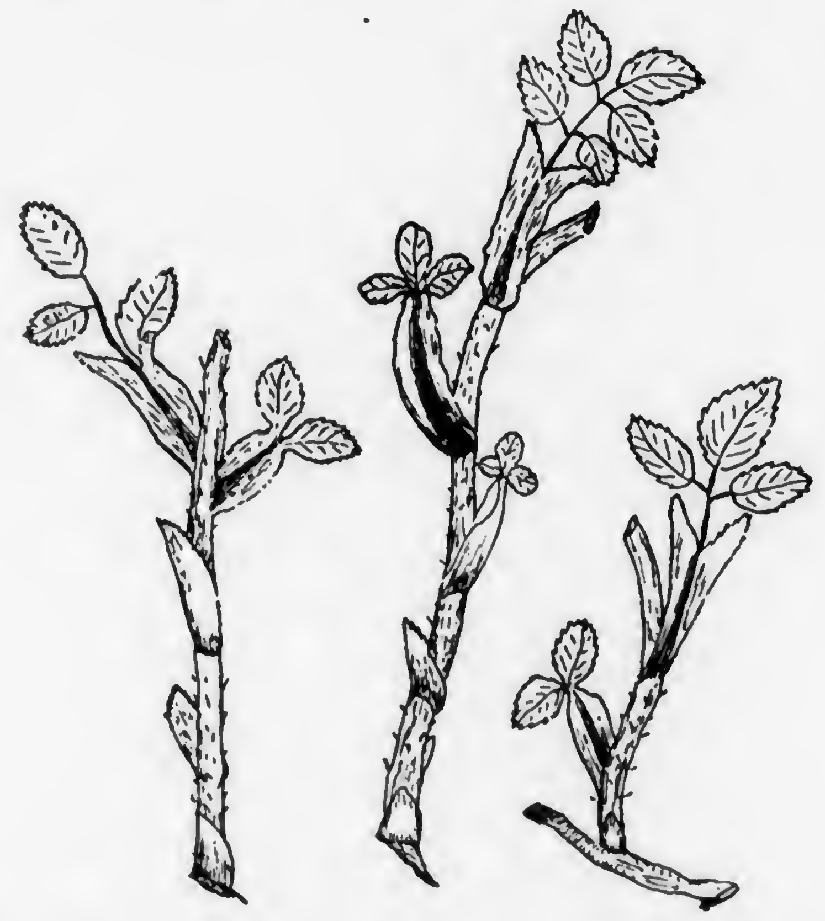
YUCCA BREVIFOLIA.—Lovers of flowers in the Northern portion of the Union, whose knowledge of Yuccas is confined to the "Adam's Thread and Needle" of gardens, *Yucca filamentosa*, will be pleased with an illustration, on page 153, of a species which not only makes a small tree, but occasionally forms straggling forests in the dryer regions of our country—and we give with this a representation of a specimen taken from the admirable report of the United States Department of Agriculture on the Death Valley expedition. Dr. Merriam says that occasionally there will be forests of them 15 or 20 miles in length. He found some 30 feet high. They are abundant in the Mohave Desert on high gravelly slopes. In Nevada they were found on Mt. Magruder—and other places—and in the southwest corner of Arizona. Dr. Torrey thought it to be a mere variety of *Yucca Draconis* of Linnæus, in which case he suggested the varietal name *arborescens* for it,—but Dr. Engleman, in the "Transactions of the St. Louis Academy," showed that it was a mistake—that it should be regarded as a distinct species and named it characteriscally *Y. brevifolia*. In the report, however, it is described as *Yucca arborescens*.

TEXAS CLOVER.—Miss Laura Bennett, of Wadesboro, N. C., notes that the *Richardsonia scabra* was introduced into southwest Georgia about thirty years ago, and has received the common name of "Texas Clover." She has seen eight acres literally covered with it. It is a very persistent weed when it once gets a foothold. Its native country is Mexico.

MANZANITA.—Mrs. Lewers says that this Indian name signifies "Little Apple."

STIPULES OF ROSE LEAVES.—Mrs. W. A. Kellerman remarks:

"One of the most interesting things connected with the study of plants, it seems to me, is the variation, the reversions, the transition stages found in the foliage. Nowhere else do we so frequently come across connecting links showing the relation of the lower to the higher forms; illustrating the development, the evolution of the more complex from the simple. Through no other channel are we shown so clearly the steps which have been taken by the plant, in climbing its 'hill of life.' Among the many interesting variations, the leaves of the young branches of the Rose (it matters not, whether of a wild or cultivated species) are well worth observing. The leaflets are so dainty and pretty, with their fine serratures, that one always admires them. But these bracts, these curious stipules crowned with quaint leaflets, bearing no petiole—sometimes part leaf, and part stipule—what are we to think of them? What can we think, but that, from the first bract or scale, at the base of the branch, we have but progressive steps until we reach the perfect leaf? It is the looking at them from this point of view, which renders them interesting,—and it is so evident that these really common variations are but types of leaves borne by the ancestors of the Rose. We must divest ourselves of the idea that the Rose, for instance, once had *an* ancestral form. Plants, like human beings, have long histories behind them; they have passed through various forms, and no one single individual *form* is *the*, and the only, ancestral type. And hence, I would say that at one time, the Rose had but what we find at the base of the branch, for leaves; later on, this bract became more developed, more leaf-like; and again, it reaches a higher plane, and evolution merges the bract into the stipule, or the latter is developed from the former. The leaves themselves are finally developed from the stipules. This is clearly shown in the accompanying illustration, and certainly, 'seeing must be believing.'"



The suggestive points made by Mrs. Kellerman, are among the most valuable of all received for the magazine. It has been tolerably well developed that even the rose petals themselves are but modified stipules. Bud-scales are always either modified stipules or of the dilated bases of leaf-stalks,—and a petal has the same protective office over the more delicate floral organs, as the bud scale performs for its delicate enclosures. Not only in the rose, but in probably all flowers, petals are the analogues of stipules or the flattened bases of leaf stalks.

IRRITABILITY IN PLANTS.—Mr. Ernest Walker, of New Albany, Ind., has recently contributed some interesting notes on the manner in which the common wild sour grass, as it is called, *Oxalis stricta*, expels its seeds. They are thrown to a great distance by the sudden disruption of the capsule. He finds *Oxalis violacea* has the same power. The common Balsam of our gardens, or, as it is sometimes called in American floriculture, "Lady Slipper," does the same,—especially when the seed pods are grasped. This and the Oxalis belong to the same natural order of plants. The garden balsam derived its Latin name, *Impatiens*, from this characteristic.

COSMOS BIPINNATUS.—Mr. W. C. Egan calls attention to the apparent adaptation of plants to circumstances as illustrated by the Cosmos. It is a very late flowering species, usually opening near Chicago just before the frost comes. This season they have bloomed earlier than usual, and by selecting seeds from these early bloomers a summer flowering race will in all probability ensue. It is by selection in this manner, that many early races of fruits and flowers have been secured. Selection rules, where environment fails.

A SUMMER OUTING IN NORTH CAROLINA.—Mr. C. F. Saunders says: "You may remember recommending me some time since to the mountains of North Carolina. I went there about July 1, and returned to Philadelphia a few days ago, and I feel as though I ought to express to you my thanks for putting me in the way of a trip that was thoroughly enjoyable and botanically profitable far beyond my expectations. I shall not be satisfied now until I can go again to that delightful region. I spent about a week at Linville.

VIEW IN THE MOUNTAINS OF NORTH CAROLINA.

I was frequently surprised to find on those dry high altitudes plants which are common in bogs and wet pine barrens,—for instance *Calopogon pulchellus* and *Pogonia divaricata*, which I saw growing on a slope of the Grandfather Mountain in a perfectly dry, barren sort of spot, between four and five thousand feet above sea level. I should be much interested to know what explanation there is for this. Perhaps you might have something to say on the subject in the columns of the MONTHLY."

The facts detailed by Mr. Saunders seem only to be accounted for by supposing that the mountain region has been thrown up since the species referred to came into existence. They were thrown up with the upheaval—and have found the moist cool atmosphere a good substitute for the damp places and bogs of lower altitudes. Annexed is another view of a North Carolina mountain scene.

GROWTH OF A WHITE PINE.—Mr. Robert Douglas, writes:

"Referring to page 119 in which you state that I am quoted, page 79, as saying that I would give a White Pine tree three times 30 years to reach a diameter of seven feet.

As I have not the page 79 article at hand, I am not certain what I did write. I certainly did not mean to be understood as saying that a White Pine tree would reach a diameter of seven feet in 90 years, as I never saw a White Pine tree seven feet in diameter, and I never saw a tree, no matter how rapid in growth—either evergreen or deciduous—that reached a diameter of seven feet in 30 years.

There may have been a time when White Pines grew to larger size in New England than any found there now.

About ten years ago, when investigating the White Pine around Hanover, N. H., the Treasurer of Dartmouth College handed me an old book. Rev'd Mr. Wheeler or Wheelock was the author, and made remarkable state-

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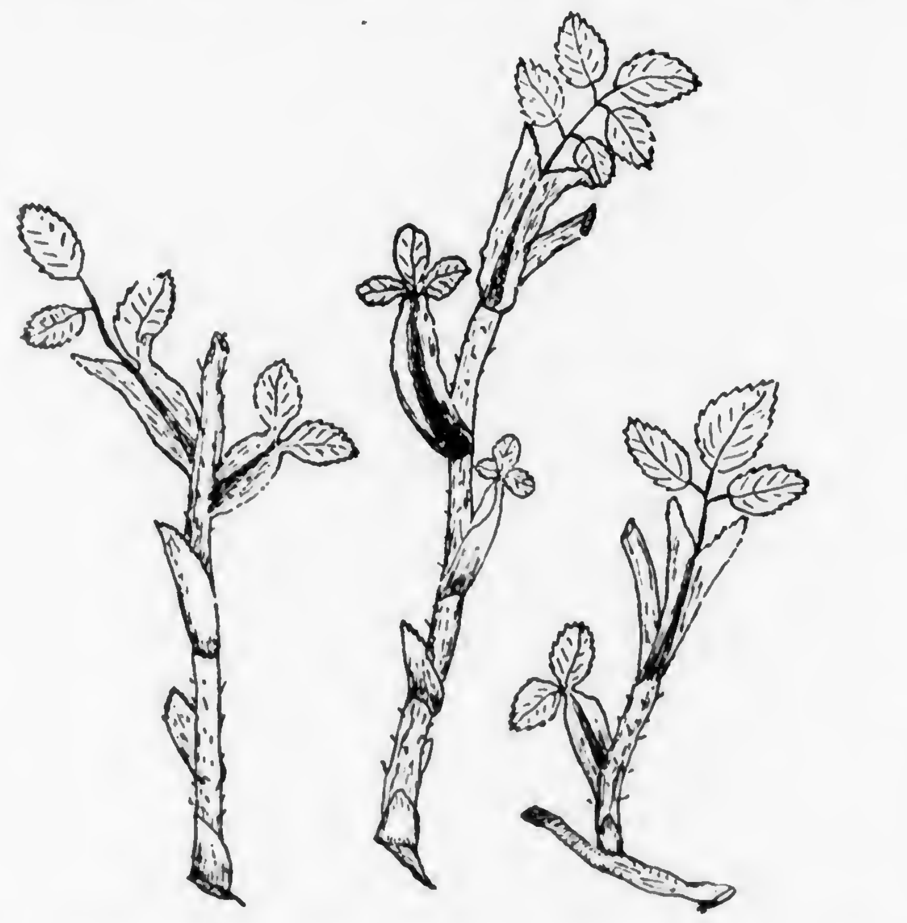
"One of the most interesting things connected with the study of plants, it seems to me, is the variation, the reversions, the transition stages found in the foliage. Nowhere else do we so frequently come across connecting links showing the relation of the lower to the higher forms; illustrating the development, the evolution of the more complex from the simple. Through no other channel are we shown so clearly the steps which have been taken by the plant, in climbing its 'hill of life.' Among the many interesting variations, the leaves of the young branches of the Rose (it matters not, whether of a wild or cultivated species) are well worth observing. The leaflets are so dainty and pretty, with their fine serratures, that one always admires them. But these bracts, these curious stipules crowned with quaint leaflets, bearing no petiole—sometimes part leaf, and part stipule—what are we to think of them? What can we think, but that, from the first bract or scale, at the base of the branch, we have but progressive steps until we reach the perfect leaf? It is the looking at them from this point of view, which renders them interesting,—and it is so evident that these really common variations are but types of leaves borne by the ancestors of the Rose. We must divest ourselves of the idea that the Rose, for instance, once had *an* ancestral form. Plants, like human beings, have long histories behind them; they have passed through various forms, and no one single individual *form* is *the*, and the only, ancestral type. And hence, I would say that at one time, the Rose had but what we find at the base of the branch, for leaves; later on, this bract became more developed, more leaf-like; and again, it reaches a higher plane, and evolution merges the bract into the stipule, or the latter is developed from the former. The leaves themselves are finally developed from the stipules. This is clearly shown in the accompanying illustration, and certainly, 'seeing must be believing.'"



The suggestive points made by Mrs. Kellerman, are among the most valuable of all received for the magazine. It has been tolerably well developed that even the rose petals themselves are but modified stipules. Bud-scales are always either modified stipules or of the dilated bases of leaf-stalks,—and a petal has the same protective office over the more delicate floral organs, as the bud scale performs for its delicate enclosures. Not only in the rose, but in probably all flowers, petals are the analogues of stipules or the flattened bases of leaf stalks.

IRRITABILITY IN PLANTS.--Mr. Ernest Walker, of New Albany, Ind., has recently contributed some interesting notes on the manner in which the common wild sour grass, as it is called, *Oxalis stricta*, expels its seeds. They are thrown to a great distance by the sudden disruption of the capsule. He finds *Oxalis violacea* has the same power. The common Balsam of our gardens, or, as it is sometimes called in American floriculture, "Lady Slipper," does the same,—especially when the seed pods are grasped. This and the Oxalis belong to the same natural order of plants. The garden balsam derived its Latin name, *Impatiens*, from this characteristic.

COSMOS BIPINNATUS.—Mr. W. C. Egan calls attention to the apparent adaptation of plants to circumstances as illustrated by the Cosmos. It is a very late flowering species, usually opening near Chicago just before the frost comes. This season they have bloomed earlier than usual, and by selecting seeds from these early bloomers a summer flowering race will in all probability ensue. It is by selection in this manner, that many early races of fruits and flowers have been secured. Selection rules, where environment fails.

A SUMMER OUTING IN NORTH CAROLINA.—Mr. C. F. Saunders says : "You may remember recommending me some time since to the mountains of North Carolina. I went there about July 1, and returned to Philadelphia a few days ago, and I feel as though I ought to express to you my thanks for putting me in the way of a trip that was thoroughly enjoyable and botanically profitable far beyond my expectations. I shall not be satisfied now until I can go again to that delightful region. I spent about a week at Linville.

VIEW IN THE MOUNTAINS OF NORTH CAROLINA.

I was frequently surprised to find on those dry high altitudes plants which are common in bogs and wet pine barrens,—for instance *Calopogon pulchellus* and *Pogonia divaricata*, which I saw growing on a slope of the Grandfather Mountain in a perfectly dry, barren sort of spot, between four and five thousand feet above sea level. I should be much interested to know what explanation there is for this. Perhaps you might have something to say on the subject in the columns of the MONTHLY."

The facts detailed by Mr. Saunders seem only to be accounted for by supposing that the mountain region has been thrown up since the species referred to came into existence. They were thrown up with the upheaval—and have found the moist cool atmosphere a good substitute for the damp places and bogs of lower altitudes. Annexed is another view of a North Carolina mountain scene.

GROWTH OF A WHITE PINE.—Mr. Robert Douglas, writes :

"Referring to page 119 in which you state that I am quoted, page 79, as saying that I would give a White Pine tree three times 30 years to reach a diameter of seven feet.

As I have not the page 79 article at hand, I am not certain what I did write. I certainly did not mean to be understood as saying that a White Pine tree would reach a diameter of seven feet in 90 years, as I never saw a White Pine tree seven feet in diameter, and I never saw a tree, no matter how rapid in growth—either evergreen or deciduous—that reached a diameter of seven feet in 30 years.

There may have been a time when White Pines grew to larger size in New England than any found there now.

About ten years ago, when investigating the White Pine around Hanover, N. H., the Treasurer of Dartmouth College handed me an old book. Rev'd Mr. Wheeler or Wheelock was the author, and made remarkable state-

INTENTIONAL SECOND EXPOSURE

ments about the size of White Pines at the time he founded the college.

This was high authority, and no one could doubt the reverend gentleman believed he was making a correct statement. But knowing that the best men are liable to mistakes, and as fortunately one statement in the book could be tested, I prevailed on Mr. Chase, the Treasurer, to allow me to test it.

The book stated positively that the sills of the building were each a single stick of timber and the building 150 feet in length.

The only way to examine the sills was to go into the cellar, which proved to be the *catchall* of everything unusable that had accumulated in a century; but we accomplished it on a hot summer day, and we were both disappointed, for Mr. Chase expected to find only one stick of timber, and I expected to find two splices; the result was, it was only spliced in the centre, making two sticks of timber each 75 feet long, aside from the splice; this was certainly a good showing for the White Pine of the past century."

The Survival of the Fittest.—Mrs. Kellerman pointedly observes that: "Years ago the return of spring was hailed with delight, and the first wild flowers were sought with the keenest of pleasure. The Spring Beauty, (*Claytonia*), *Erythronium*, and blue violet were my favorites. Often besides gathering bouquets the plants were dug up, taken home and planted in some nook or corner of a flower bed. I finally had quite a wild garden, as they grew and wandered beyond the border of the flower-bed, making themselves quite at home in the sod of the lawn, or yard, as we said then.

"Recently, after an interval of twenty years, I visited that old door-yard, and what was my surprise to find that the blue violet had monopolized it all! There was absolutely nothing else. All the flower-beds of twenty years ago were merged into one great bed of violets. Not a blade of grass, not a Spring Beauty nor an Erythronium was to be seen.

"My curiosity as to the reason why the violet was able to gain so completely the ascendancy was thoroughly aroused. I found no blossoms which had perfected seed, though the plants had bloomed profusely. Pulling up several bunches I found many of those peculiar seed pods, which appear as if seeking concealment at the base of the plant, bending down towards the roots, quite out of view.

"Now, is it not a little strange, a good subject for 'speculation,' indeed, that the violet, in spite of the fact that it produces flowers abundantly, to which insects have free access, still produces its seed in this secluded manner from buds which never open? These curious 'pods' are quite abundant and well filled with seed, and no insect or wind, or outside agency has anything to do with their pollination. And since new plants spring from the rhizome in such prolificacy, why this abundant production of seed?

"Is the plant in a transition state still uncertain as to which mode of reproduction will best answer the purpose of perpetuation?"

These underground flowers are called cleistogene; that is, being born in secret, and occur, as is now well-known, in many plants, borne both above and near the ground. They have disturbed considerably the speculations that were gaining ground some years ago, that color and fragrance were assumed by flowers; in order to attract insects, and thus insure cross-fertilization, which on very slim evidence was supposed to be a benefit to the species of plants. These cleistogene flowers; have no petals or odor, but the same plants at some stages do produce petal bearing flowers; and then it was assumed that the plant, tired, as it were, of in-and-in breeding by these closed bud seeds, produced some attractive flowers to get at an "occasional cross." But this amended speculation has proved faulty, for it is found they seldom yield any seed. Even where they do the "occasional cross" plant would be crowded out, as Mrs. K. well points out, by the sheer force of numbers. The Liliputians, weak as they were individually, were the "fittest" to survive in the battle with Brobdignag.

Bear Grass.—A correspondent says that in the South *Yucca filamentosa* is known as Bear Grass, and that farmers keep a few stalks cultivated in order to use the leaves as strings in order to hang pork on,—and for other similar uses. In some cases the plant throws up the flower stalks ten feet high. Soap can be made from the roots.

GENERAL GARDENING.

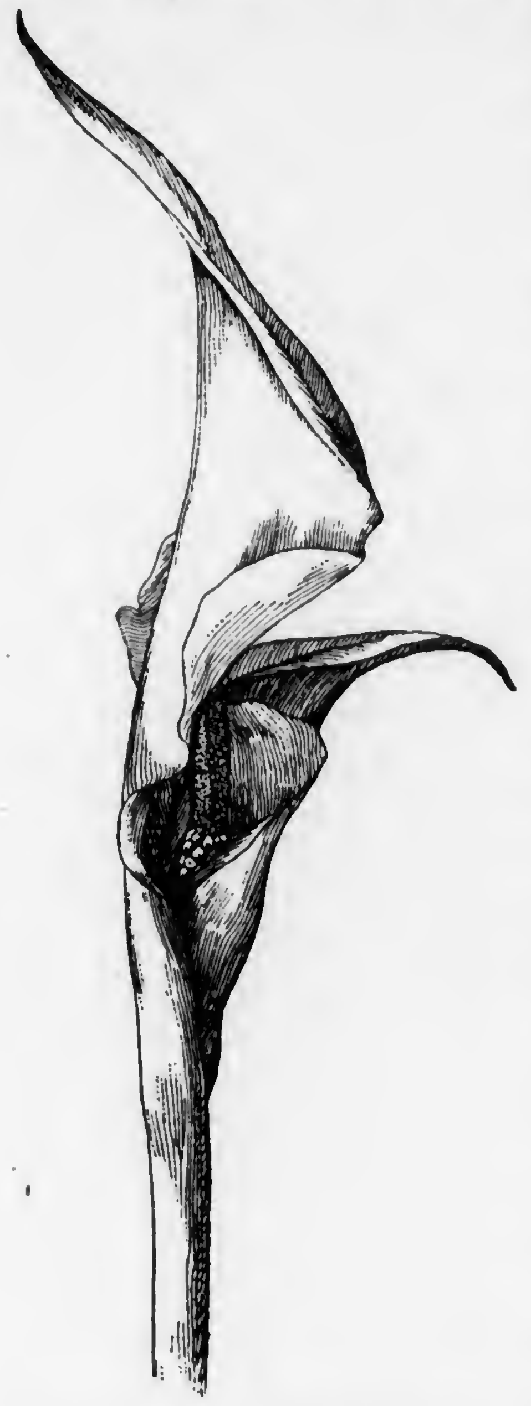
HAIL TO THE APPLE TREE.

"Here's to thee, old apple tree:
Hence thou may'st bud, and whence thou may'st blow;
And whence thou may'st bear apples enow:
Hats full: caps full:
Bushel, bushel, sacks full,
And my pockets full too: Hurra:"
—Old Ballad.

Pruning Trees.—A correspondent justly remarks that amateur gardeners know very little of pruning and that instructions in this line would be very desirable. The unfortunate part of all attempts at these practical lessons is that in pruning, one must have some object before he starts, and that this object will vary continually—not only on various trees, but with a tree itself—and it is impossible, therefore, to give practical lessons in detail without knowing what particular object one may have in view. For this paragraph, we will say that one might have fruit trees growing in a comparatively small space, and which he, therefore, desires to keep dwarf. With this object in view, a very special system of pruning would be necessary, and the object would be to get growing branches nearer to the ground and not up in the air a long distance, where the trees would make large, spreading heads. In order to accomplish this, one has to prune out, during the summer, most all the strong and vigorous growths at the apex of the plant, so as to throw the course of the sap into the branches near the ground; for, in a state of nature, the tendency of the tree is to go up, and to go up as rapidly as it can, and the upper branches are, therefore, the strongest, and the lower branches are the weakest. To cut the strong ones out, therefore, strengthens the lower ones. It is on the same principle that we prune hedges. These we wish to keep low, and for this reason the plants are pruned in the summer time. The strong, vigorous branches—the top of the hedges—being the ones cut out; and this throws the sap into the branches near the ground, thereby strengthening them and making them of equal growth with those at the apex,—and this work has to be done during the growing season. If the same kind of pruning were done in the winter time instead of the summer, the result would be that the next spring innumerable strong shoots would push out where the upper ones are cut off,—and growing so strong they would absolutely draw the nourishment from the lower branches. The pruning has to be done in this case while the sap is in vigorous circulation, so that the channel may at once be turned into these lower branches. One might take up any number of questions of trees in detail—apples, cherries, plums, grapes, or whatever it may be—and the lesson is just the same for all of them. If you want to keep trees dwarf, with abundance of good growing branches near the ground, cut out all the strong shoots at the apex during the growing season. From time to time, we may give other similar lessons in regard to other objects of pruning.

A Pretty Wild Garden.—Mrs. Mary E. Loud, of Chelsea, Mass., has a beautiful wild garden, which has attracted the commendation of the Massachusetts Horticultural Society. This little garden is 30 feet long by 20 feet wide, and a strip of 3 feet around the margin, —and a small patch in the centre being of grass; yet in this comparatively small space Mrs. Loud has growing more than a hundred species of native plants, and one of the chief pleasures of her life is in caring for and cultivating them. The selection has been so made that some flowers are in bloom the whole season of the year, commencing with *Hepatica triloba*, the wild columbine, some of the early crowfoots, blood roots, and violets, winding up at the end of the year with various golden rods and asters. Some of them are grown expressly for their rarity, while such common things as the ox-eye daisy, which, though common, are yet inexpressively beautiful, find a place in the collection. A small space is devoted to ferns—some two dozen of the most interesting kinds finding a place in the garden.

Double Spathed Calla.—The common calla, or *Richardia æthiopica*, often has a double spathe. Mr. A. Blanc sends Meehans' Monthly a case in which the spotted calla, *R. maculata*, has taken the same course. These abnormal growths are useful for the lessons they teach. The true inflorescence of the calla is the inside spike, known as the spadix. The upper yellow portion is a mass of male flowers; the female flowers are at the base. But the flower stem of which this "spadix" is the termination, has been enfolded by the stalk of another leaf, and so closely that no mark of union is left. The leaf blade only was not absorbed; but as if in revenge for this close familiarity, the ruling power in the floral kingdom has forced this leaf blade to loose its green color at any rate, and to blanch and pale, as if part of the real flower. In this instance the union has not been so complete as in the cases of other callas, and the outer leaf at the apex has a more sheath-like appearance.



RICHARDIA MACULATA, WITH DOUBLE SPATHE.

Ever-blooming Climbing Roses.—Roses, hardy enough to stand considerable frost, and to serve as climbers are scarce, but one of the best is Gloire de Dijon. This has often been known to get through safely when the thermometer has fallen to zero. It is a rapid grower, and in a few years will cover the gable of a two-story house. The delicious fragrance of the tea rose, one of its parents, is abundantly displayed. The rose William Allan Richardson, is said to be a successful competitor with Gloire de Dijon in the old world. Has any one had good American experience with it?

Popularity of the Carnation.—Flower lovers who are growing gray can remember how fickle fashion has changed, and often left some smooth sailing favorite high and dry on a neglected shore. Take the camellia for instance. It made the fortune of many a florist less than half a century ago. Philadelphia especially was one of the headquarters for camellia culture. Any florist had or could fill at a few hours' notice orders for a thousand plants at a time. Recently an order came to one for a hundred from a Southern customer, which could not be filled by the whole city. How different with the rose and carnation. The popular love for these has never failed. Spenser, the great poet of the reign of Queen Elizabeth, writes:

Bring hither the Pincke and purple Cullambine,
With Gelliflowers,—
Bring Coronations, and Sops-of-Wine,
Worn of paramours.

It is clear the small bunches of carnations worn by all who can reach them to-day were just as popular three hundred years ago, or long before even that. The carnation is a flower of the gods—a Dianthus—and will never die.

Female Ailantus.—Mr. C. F. Saunders, of Philadelphia, justly calls attention to the great beauty of this tree. The male Ailantus first disgusts by its disagreeable odor, and then the flowers fall leaving nothing more behind them. But the female flowers have a rather pleasant fragrance and are followed by the fruit, which soon takes on a beautiful golden color. Most will agree with him that there are few things more beautiful than the female Ailantus with its young fruit during the months of August and September. By the way the name is Ailantus and not Ailanthus, as frequently written, the tree being named from the Chinese "Ailanto."

The Cedar of Lebanon.—A correspondent from Dayton, Ohio, inquires how far north the Cedar of Lebanon has been known to stand the rigors of our winters. In Mr. Downing's time there was a very large specimen at Princeton, N. J.; no doubt there are good specimens further north. It would be well to make a record of them, as these practical experiences are of great value to planters.

The Empress Tree.—Mr. George Canby, of Philadelphia, writes that a recent measurement of the specimen of *Paulownia imperialis* in Independence Square, Philadelphia, gives nine feet in circumference. It will be interesting to know whether there is any larger specimens in America. In Japan they are extremely valuable forest trees, the wood being used for similar work to which we should apply our *Liriodendron*, or Tulip Tree, the wood being very soft, light and white; the growth is extremely rapid. The specimen referred to was given by the late Mr. Robert Buist to the city, to be planted in its present location. He used to remark with a sad expression of jocularity that after having kept a large number for many years he became disgusted with its rough-looking habit. He had all his fine plants burned, supposing no one would care to buy them; but a year or two after this ruthless destruction of his stock this one in Independence Square flowered, and having such a delightful fragrance and pale blue blossoms, there arose a very large number of inquiries for the plants which he had but a year or two before destroyed.

The Mexican Tiger Flower.—Possibly one of the prettiest and most interesting of the bulbs that are planted in the spring is the Mexican Tiger Flower, *Tigridia Pavonia.* Some few years ago one species was discovered to be a native of the United States, having been found in southern Texas by Mr. Pringle,—this has been named *Tigridia baccifera.* It has blossomed the present season in the collection of Mr. F. H. Horsford, of Vermont.

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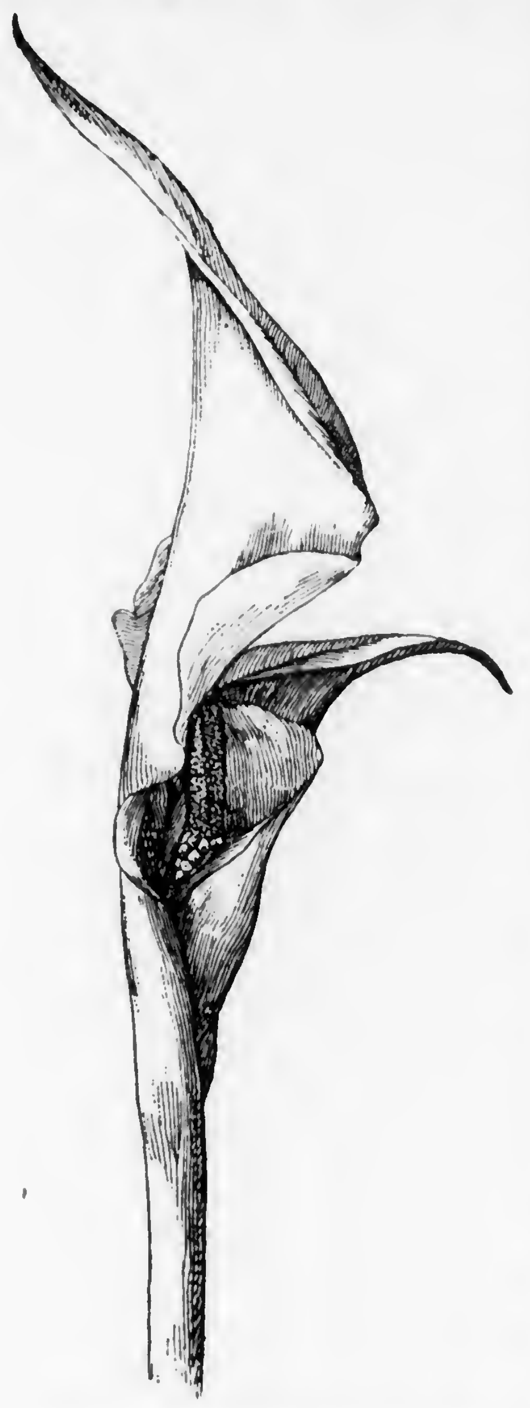

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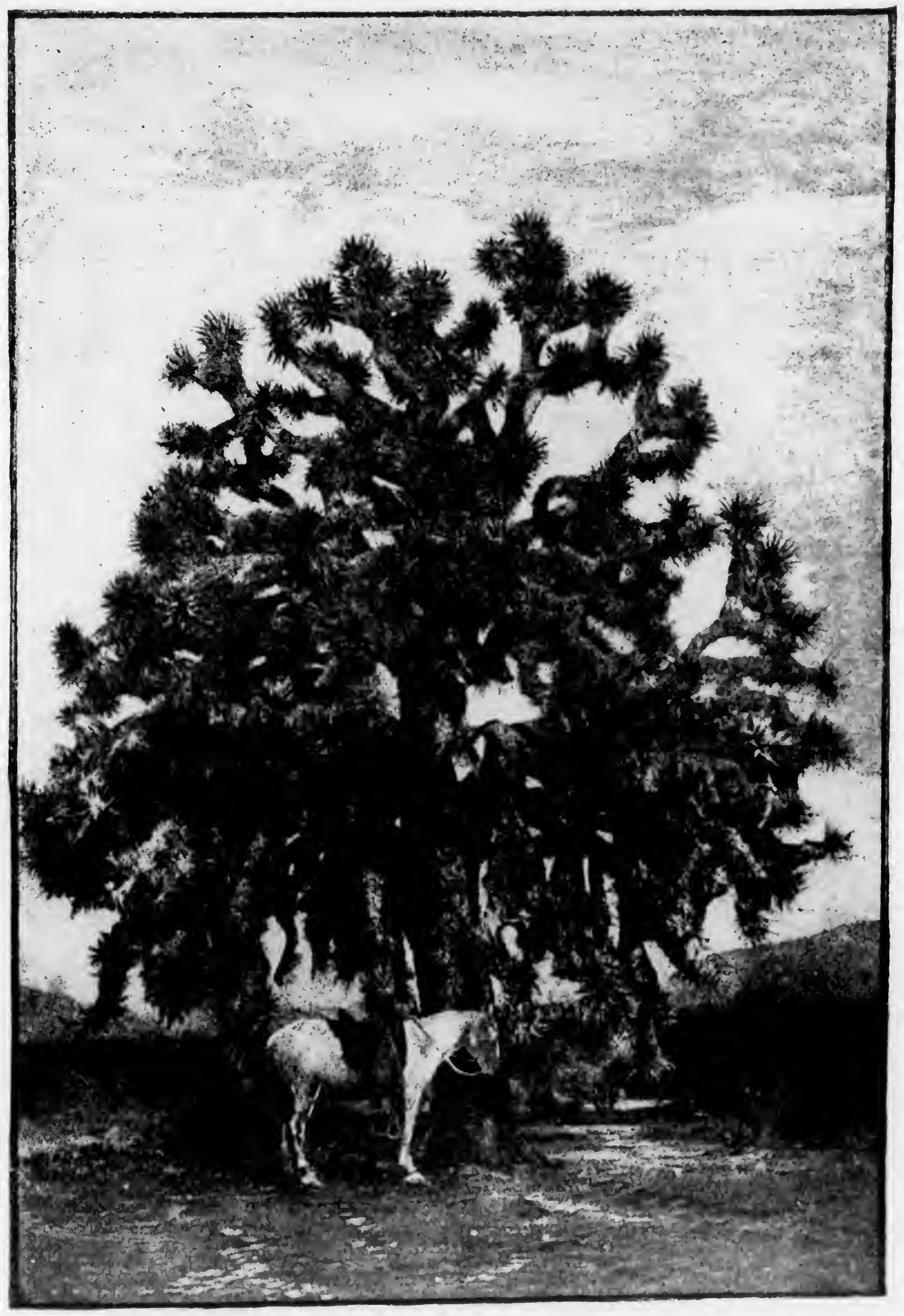


YUCCA BREVIFOLIA.—SEE P. 147.

INTENTIONAL SECOND EXPOSURE

Kœlreuteria paniculata. — Miss Fay writes that this beautiful small tree is perfectly hardy at Falmouth, Mass. We have an impression that it is one of the hardiest of Japan trees, and no doubt will be found to endure winters much further north. It will be worth noting that the flowers, like so many trees, are more or less bi-sexual, some trees having flowers wholly barren, while others are abundantly fertile. They also vary as to time of blooming. In the Meehan Nurseries is a group composed of six trees, which have all grown up closely together. There is as much difference as one month between the time of the earliest and the latest to bloom. Every one admires a beautiful golden sunset, and the Kœlreuteria in full blossom has nearly as attractive a representation of this beautiful scene as it is possible for even a skilful artist to produce.

Planting Potted Strawberries.—A not uncommon fault in planting strawberries, whether they are plants from runners direct from the ground, or whether they are potted plants, is to set the crown too deep,—if the crown is set an inch or even less beneath the surface, it is almost sure to rot. Many set them so that a good portion of the leaf stalks are covered as well as the crown. This is not only true with strawberries, but of many plants which have a similar habit of growth. Even such an easily growing plant as the blackberry or the raspberry will rot when set too deep. There is a bud at the base of the cane from which a new plant is to spring; and if this bud is buried too far beneath the surface, just as in the case of the strawberry, it will rot. Plants of this character should be set so that the bud itself is barely beneath the surface,—but very great care should be taken to press the earth very tight about the roots. It is literally true that the earth should be hammered in about plants when with light roots of this character.

Protection of Half Hardy Plants in Winter.—A correspondent of Reading, Pa., endeavored to protect *Magnolia grandiflora* by tying long straw about it and then tying this straw with coarse sacks. All the leaves subsequently dropped off of them when making new growth. Trees of similar character do not want close protection of this kind—but simply to be sheltered from the sun and cold winds—the atmosphere is rather an advantage to them. There are quite a number of very fine specimens of this Magnolia in the city yards and gardens of Philadelphia and vicinity that get no protection at all but what the surrounding buildings afford. The sun does not shine on them long in the winter, and the cold winds are effectually kept from them.

Campanula Mariesii.—One of our prettiest border plants is the *Campanula grandiflora.* There are two varieties, white and purple. It is an admirable plant for cutting, as the leathery flowers continue a long while without withering. It is popular with florists on this account. A new species, *Campanula Mariesii,* has been introduced from Japan, and flowered for the first time on our grounds this season. The leaves and flowers seem very much like the well known form we have referred to; but the plant is quite dwarfish in its habits, not growing more than a foot high, while the other species is well adapted to the back part of a border, growing as it does several feet in height. The new introduction will be valuable for placing in positions near the front of the beds.

Improvement in Bulb Gardens.—There are a number of herbaceous plants which flower in spring almost as early as the tulip, the hyacinth, and other plants known as German bulbs; and when these herbaceous plants are used as bordering for the tulip beds, or in other ways, in connection with the cultivation of these flowers, the effect is said to be quite unique. It certainly adds very largely to the varied pleasures which the cultivation of flowers gives.

Improved Cannas.—The great popularity of the Canna for tropical effects in our northern flower gardens during the summer has led many florists to take especial interest in producing new and improved varieties. One of these experimenters who have achieved remarkable success is Mr. J. C. Vaughan, of Western Springs, near Chicago. He raises Canna plants in immense quantities, and has produced, among seedlings, many remarkable and valuable varieties.

Cutting Back Evergreen Hedges.—Mr. Joseph Dougherty, of New Castle, Del., inquires whether it would be safe to cut down an arbor vitae which has grown too large, being now twenty feet high. An evergreen of this character can safely be cut down as low as may be desirable, providing some evergreen foliage is left to give the plant a start. No plants suffer so much the loss of foliage as evergreens, —and in all pruning, whether the plants are growing in hedges or singly, it must always be kept in mind that some healthy green branches are to be left,—otherwise the trees will die.

Hanging Baskets.—These are nice attractions for rooms, and are especially desirable for suspending under trees in summer time. But they dry out rapidly, and should be soaked for some minutes in a bucket of water two or three times a week. One of the best plants for summer flowering in such baskets is the Blue Lobelia. It likes a little shade with cool soil to do well, and this it gets in baskets suspended on the tree branches.

The Morel.—Mrs. Seligman, of Hartford, notes that she used to buy them fresh in the spring, presumably in Europe, where people gathered them in hilly forests of oak and birch. They are readily found by their peculiar aromatic scent. They are sold, she says, in every first-class grocery, both in the fresh and dry state. A friend of hers reports that they are tolerably abundant at Homer, Champaign Co., Ill.

Bedding Fuchsias.—A dwarf and comparatively hardy race of Fuchsias is being developed in the old world from the species known as *Fuchsia Riccartoni*. The dwarf forms are not much more than a foot high, and the plants bloom all summer. In our country they would require damp, cool and shady situations to thrive well.

Magnolia Thompsoniana.—This is one of the late flowering Magnolias. It is said to be a hybrid between *M. grandiflora* and the *Magnolia glauca*, but there is no indication of any other species being mixed with it. It is just as sweet as *Magnolia glauca*, but comes into bloom a little earlier than the normal form.

FRUITS AND VEGETABLES.

Protecting Vegetables in the Winter Season.—It does not seem to be generally known that light in the winter time is the chief agent in the destruction of vegetables, otherwise hardy; and especially light shining brightly on the plant when frozen. A cabbage or turnip that is exposed to the light rots readily, but will keep perfectly sound if but slightly covered with earth. This principle should be remembered when collecting vegetables together in large masses for protection. It is often customary to cover such sets of vegetables with some light material, such as leaves, hay, or straw, the result of which generally is simply to form a harbor for mice, which is much more destructive than the frost itself. Water has, of course, to be excluded, and if the vegetable plants are set closely together and covered with boards to keep out the rain, it is generally all that is required. Water must be excluded, or else rotting may result. For this purpose it is good practice to invert vegetables at times; the cabbage especially must receive this attention. They are almost always inverted when placed together under boards, or covers for protection, and, in fact, where no covering at all is used they will keep perfectly well when inverted.

Manure for Fruit Trees.—There are two methods of manuring, one spreading it on the surface, and the other plowing or digging it in. As the result of long experience it is found that much better results are achieved by surface manuring than by the other method. In fruit trees, especially, this has been found to be the case. The top dressing should be applied as soon in the spring as the frost is gone, or, at least, in time to get the benefit of the spring rains, which carry the fertilizing material a little way beneath the surface of the soil.

Raspberry Culture.—Prof. Fred W. Card, Cornell University Experiment Station, Ithaca, N. Y., is making an especial study of the Blackberry and Raspberry, both in their history and culture, and any one in possession of any special fact would be thanked for the information and get due credit when the paper is published.

EXPERIMENT WITH WILD POTATO.—Mr. T. Wheeler, of Moscow, Vt., says:—"Your last statement, 'New growth could not possibly come from the old interior wood,' brought to my mind one particular experiment which I tried with *wild potatoes* three and two years since. In digging these potatoes I found one very sound potato (an *old* one of the previous year's growth) which I thought to save over and plant the next spring and see if it would grow a *second* crop. * * * spring I carefully planted it, sticking a stake on each side of it. In due time it came up and grew vigorously all the season.

In digging this hill, in the fall, I found 125 potatoes in number. Of course some, yes, many of them, were very small.

It seems that this potato had life left in it after producing one crop.

I have been experimenting with these potatoes for eight years, then taken from the mountains of Mexico in their wild state.

I had hoped to raise up a healthy potato, free from disease, but I am getting discouraged, for I am beginning to think that one man would not live long enough to accomplish the desired result as to *size*.

As yet they show no signs of disease. No potato bugs will touch them. In all their growth from spring to fall no person can guess what they are. If you should take any notice of this in your MONTHLY, please give your opinion as to the poisonous nature of these potatoes.

Would you have any fears in cooking and *eating* these potatoes?"

[Mr. Wheeler's note was not paged, and it would seem where the asterisks are placed something is missing, but that part evidently describes that the roots are persistent. Still the law does not vary even here. It is the exterior layer of cells only that carry on the life processes.

This "Wild Potato" is probably the common *Ipomœa pandurata*, a great enemy of the cultivator and the roots of which, enlarging from year to year, sometimes get as large as some human beings, and get the common name of "man of the earth"—roots in this popular sense meaning tubers. The sweet potato is closely allied to it, and so is the plant from which "Jalap" is produced. There seems no reason why the roots should not be wholesome when properly cooked,—but one must do, as the original man did with every thing found to be good, try a very little first, which can do no harm,—and then eat more when no bad results follow the little taken.]

PRESERVATION OF CABBAGE IN THE WINTER.—A correspondent of the "Lyon Horticoie," an excellent French magazine, refers with approval to the common American practice of preserving cabbages by placing them upside down, and then covering them with just enough earth to prevent the sun from affecting them. Frost in darkness does not injure the leaves; while the inversion prevents chance of water getting in to rot the heads. The roots, of course, are above the ground; but this makes no difference. It is one of the easiest and best methods of preserving this vegetable during the winter. If the earth is not very thickly spread on, say not more than an inch or two, it is easily cracked by a light blow, so that there is no difficulty in getting out the heads in the severest weather.

ZINC LABELS.—Some years ago the *Gardeners' Monthly* made the public acquainted with the fact that an ordinary lead pencil used on zinc makes an indelible mark, and since then zinc labels written in this way are among the most approved for trees of permanent character. Although not clear, the writing is legible for many years. The zinc label may be in the form of a triangle and the narrow portions coiled around a branch. It requires uncoiling every few years; otherwise it will grow into the bark.

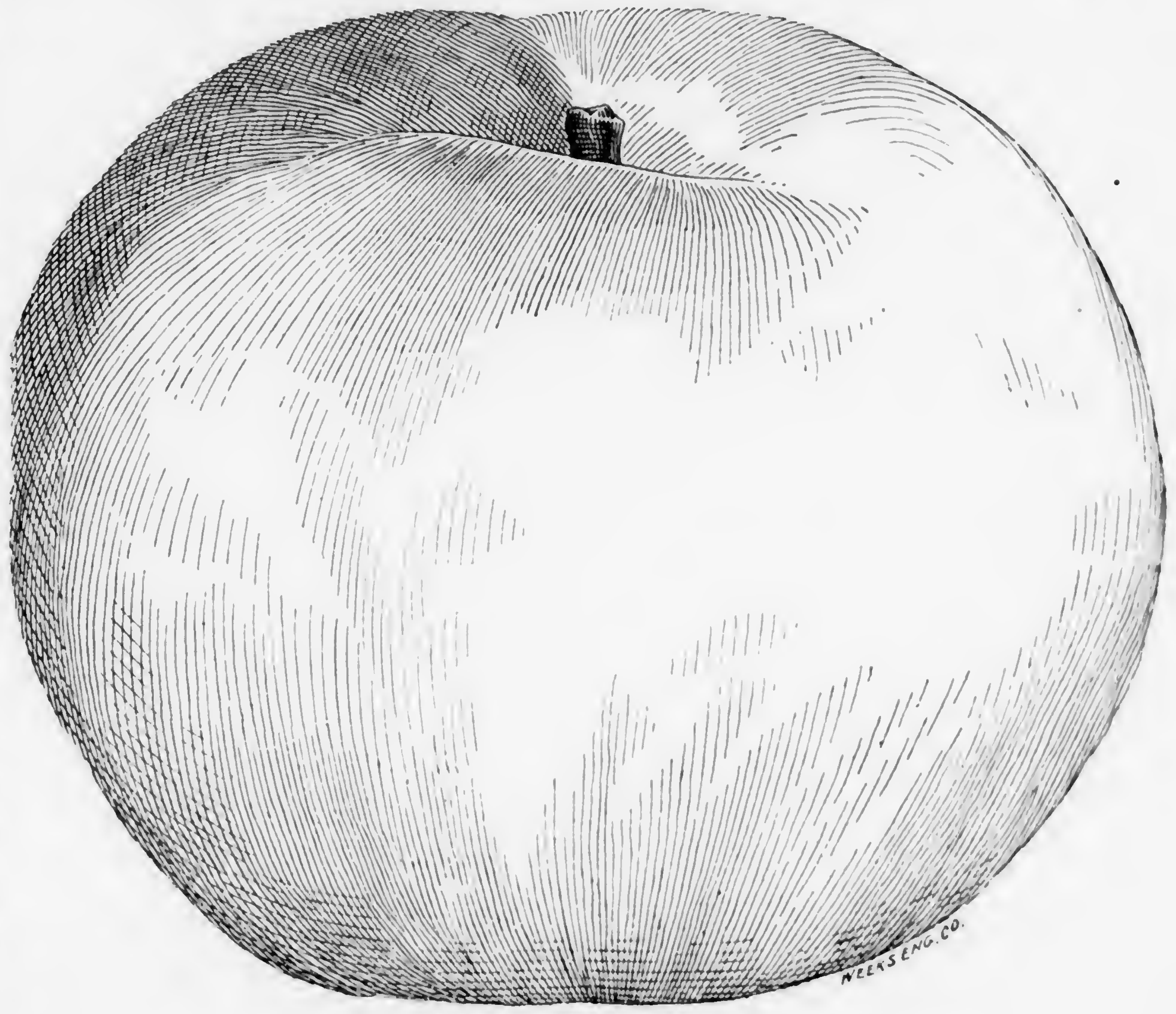
THE DEACON CHERRY.—It does not seem so very, very long ago, since the writer of this paragraph sent the first Cherry trees to California. They had to make a long voyage round to get there. Now the fruit growers of the State can not only raise their own Cherry trees, but have new varieties from the seeds they have raised. The Deacon, a variety raised by the W. R. Strong Company, of Sacramento, is said to be in the way of the Black Tartarian, but is ten days later.

VITALITY OF SEEDS.—Seeds vary in vital power of one sample, a seed may live one, two or three years. The earliest to ripen die first.

MANAGEMENT OF ORCHARDS.—It is conceded that orchards are the best managed when the surface of the ground is not disturbed; but this depends on various conditions. For instance, if the ground is comparatively poor and a large crop of hay is expected, without any fertilizing, it is impossible for the trees to keep in good condition. Trees require food as well as grass, and it is impossible, besides unreasonable to expect two full crops from the same ground. Where, therefore, grass is grown under orchards, it has to be kept low in some manner, or else heavy dressings of fertilizers applied. Where sheep can be employed to keep the grass down, orchards are more successfully managed than in any other way. In addition to the advantage of keeping the grass cropped, is the fact that the animals eat the wormy apples, and in this way destroy a large amount of insect larvæ. Where sufficient fertilizers for top dressing cannot be obtained, rather than have a heavy crop of grass or weeds, it is much better to keep the surface harrowed or even plowed. Any one who may have had the opportunity of seeing a fruit tree on a lawn where the grass is kept constantly mown, will not need any other lesson to show the advantage of not disturbing the soil, as it is so often done by people who use the plow among the trees.

THE BEST COUNTRY FOR APPLES.—It is said that California will never get the fame in apple culture which has followed its experience with other fruits. This is natural; the apple is a native of cool and comparatively northern regions. It has never been able to adapt itself to warm countries. Even in the Eastern States the apple is not a particularly successful fruit south of the Potomac river, except in the mountains and cool regions. All along the Allegheny range they thrive admirably, quite as well as in the famous apple regions of western New York; but when we get into the lower lands, where a long and comparatively high summer temperature prevails, the apple would never be looked upon as a desirable orchard fruit by those who were looking to profit from fruit culture.

THE STARR APPLE.—An apple equal to the famous White Doctor in the latter's special good qualities, and yet a month earlier, as presented by the "Starr," seemed deserving of an illustration, but it could not be gotten ready for the paragraph which appeared in the last issue. The engraving is full size from the specimen received from Mr. Parry.



THE STARR APPLE.
(Full size.)
Ripe near Philadelphia the end of July and beginning of August.

WINE MAKING IN AMERICA.—Mr. Elwood Johnson, of Germantown, Philadelphia, has a bottle of wine made in 1760, from American species of grapes, which is probably the oldest sample of native wine in America. The Frost grape was probably used.

BIOGRAPHY AND LITERATURE.

AUTUMN LOVE.

True Love is but a humble, low-born thing,
* * * * * *
Which, when our Autumn cometh, as it must,
And life in the chill wind shivers bare and leafless,
Shall still be blest with Indian-summer youth
In bleak November; and, with thankful heart,
Smile on its ample stores of garnered fruit,
As full of sunshine to our aged eyes
As when it nursed the blossoms of our spring.
— LOWELL.

NEHRLING'S "OUR NATIVE BIRDS OF SONG AND BEAUTY."—A caustic writer once said of a class he disliked, "had they a hand in the creation of the world not a flower would have been made to bloom nor a bird be allowed to sing." It so happened that there are no warmer lovers of birds and flowers than those the critic was angered at. The love of both is innate in the human race, and the love of both go together. To the readers of MEEHANS' MONTHLY no recommendation of such a beautiful and scholarly work as Nehrling's "Our Native Birds of Song and Beauty," will be necessary. It will stand in all libraries side by side with the best illustrated works on natural history that this country has produced. The second volume, to complete the first, now presented, will soon be issued. There will be thirty-six colored plates of American birds, a number of species being presented on a single plate. The whole is to be issued in sixteen parts, with, in addition to the colored plates, forty to forty-eight pages of reading matter relating to the birds described. Mr. H. Nehrling, the author, is connected with the Public Museum of Milwaukee, and the well-known Milwaukee book firm of Geo. Brumder is the publisher. The subscription price is $15. The first volume, beautifully bound, is now ready; price, $11.

ROBERT CORNELIUS.—Amateur horticulturists have lost a devoted and successful friend in Robert Cornelius, formerly of the well-known Philadelphia firm of Cornelius & Baker,—the firm who built the bronze stair-railing in the Capitol building at Washington. He was always in the advance in every improvement,—and the writer of this well remembers his enthusiasm in exhibiting an appliance to light all the gas lamps in a large hall by merely turning on an electric screw. This was thought to be the great wonder of the world in its time,—but he lived to see far greater advancements than this as soon as the dynamo was constructed. In horticulture he was especially famous for his successful cultivation of fruits. Pears, especially, were a great favorite with him. He was always on the alert for new methods of culture, not so much for himself,—but because he felt in this way he was advancing the pleasures of horticulture. He was the inventor of a propagating pot, which for a long time was quite popular with successful florists. He also was the inventor of a method of grafting the grape from green wood, which was particularly successful and yet extremely simple. For many years he was one of the strongest supports of the Pennsylvania Horticultural Society when it was to a great extent the admiration of the whole union. He was born on the first of March, 1809, and died on the 10th of August last.

BOTANY IN THE WEST.—The report of the Professor of Botany in the University of Michigan, Dr. W. J. Beal, shows a wonderful advance in the popularity of botanical study in that section of our country. The herbarium, especially, is now believed to be one of the best in the Union, while Dr. Beal is recognized as one of the foremost of botanical instructors. Very much depends on the personality of a teacher of science,—some have the ability to attract students to studies that very often seem hard, but the good teacher renders the pathway so pleasant that supposed difficulties soon disappear. The late Dr. Gray was one of these exceptionally attractive men,—Dr. Beal is a student of Dr. Gray's, and seems to have imbibed the geniality of Dr. Gray with high botanical attainments.

GEORGE S. CONOVER.—Mr. George S. Conover, the eminent historian of the Indians of Geneva, is one of that city's patrons of gardening. A recent issue of the *Geneva Review* has an appreciative notice of Mr. Conover's garden work. He is especially fond of wild flowers, and has a number of the rarer kinds in cultivation. One of his chief pleasures is in giving away to his friends and neighbors his surplus plants. He has over fifty varieties of Pæonies, and forty of Daffodils. Dead trees are utilized by planting around them various forms of flowering vines. One of the finest illustrations of the value of the Japan ivy,—the *Ampelopsis Veitchii*—to be seen in America, is growing over Mr. Conover's house. He uses these plants as a sort of ladder up which very delicate plants may climb. Clematises and other flowering plants are set out with the ivy, and they all grow up in harmony together. This is an excellent idea which may be largely improved by the readers of MEEHANS' MONTHLY.

SIR JOHN BENNET LAWES.—*The Country Gentlemen* of August 24th gives us a picture of this great man, for surely if anyone has a right to this honorable designation it is Sir John Bennet Lawes. There have been numerous men eminent in practical gardening, and some who are as prominent in the science as well as art; but Lawes has united science and practice to such an eminent degree, that he has the satisfaction of seeing the good results of his work in his own lifetime; while usually such work as this is scarcely apparent until after the workers are gone. One point, however, may be remarked that Sir John is now in his eightieth year, so there has been abundant time for the fruition of the seed which he early sowed.

SCIENCE.—This monthly serial is now in its eleventh year, and deserves the hearty support of those who value general intelligence. The world is only just coming to appreciate the value of exact knowledge, which is simply what science means. "What good?" has become a stale query. Lovers of flowers especially laugh at the question. What good is the geranium growing in an old tomato can to the poor woman who so sedulously watches over it? Human pleasure and human knowledge are closer than Siamese twins. *Science* should have a growing subscription list. It is published weekly by N. D. C. Hodges, New York, at $3.50 per year.

THE ASA GRAY BULLETIN.—It has come to be an acknowledged principle that the value of a magazine does not consist in its size, so much as in brief and well considered statements of facts. The Asa Gray Bulletin is a good exemplification of this,—although small in its number of pages, it abounds with facts about wild flowers and botany in general, that we could not find in larger or more pretentious works. It is the official organ of The Gray Memorial Botanical Chapter of the Agassiz Association.

It is not saying too much that even the most intelligent amateur or professional botanist will find it a great aid in botanical study.

Applications for membership in the Association can be made to C. L. Shear, Alcove, N. Y.

FREDERICK LAW OLMSTED.—Landscape gardening in America owes gratitude to Mr. Olmsted, one of our popular landscape gardeners, well known in connection with Central Park, New York, and who has devoted his whole life to this art. Numerous illustrations of the value of his work are around us everywhere, and particularly the work in connection with the Columbian exhibit, which in many cases leave on the minds of visitors to the exhibition more lasting impressions of pleasure than anything else seen there. It will gratify all lovers of true art in gardening to learn that Harvard has conferred the honors of an LL. D. on Mr. Olmsted.

FRANCIS PARKMAN.—This excellent amateur horticulturist is now in his eighty-first year. Few men have enjoyed the pleasure of gardening more than he. His recreation has been among his garden and flowers. Some branches of gardening he has made an especial study, especially in connection with the improvement of lilies, one beautiful variety—*Lilium Parkmani* being named in his honor. All intelligent Americans will wish a long life to the author of "Pioneers of France in the New World," one of the most fascinating historical works ever written.

GENERAL NOTES.

Destruction of Forests through Christmas Trees.—The newspapers are frequently very pathetic over the enormous destruction of forests, caused by the annual sales of Christmas trees. As trees are, in any form, valuable only for the pleasure which humanity can derive from them, there seems to be no more reason why they may not be sacrificed for this pleasure when comparatively young, as for floor boards when they reach maturer years. The satisfaction which thousands of young folks receive from the Christmas tree is a full compensation for its destruction; and aside from this, as any one knows who may have visited northern forests, the trees usually are far too close together ever to form first-class timber. Spruce and Firs may be seen growing together as thick as wheat in the grain field; and to expect timber from such closely growing specimens is entirely out of the question,—hence the trees may be cut from the young northern forests without operating against full grown forest trees eventually.

Condensation.—While some of our co-temporaries are boasting of their immense size—one priding itself on 115 pages,—Meehans' Monthly is setting the example of condensation. Life is now too short for long reading. The conductors believe as much is given in the sixteen pages of this magazine as could be spread over 50.

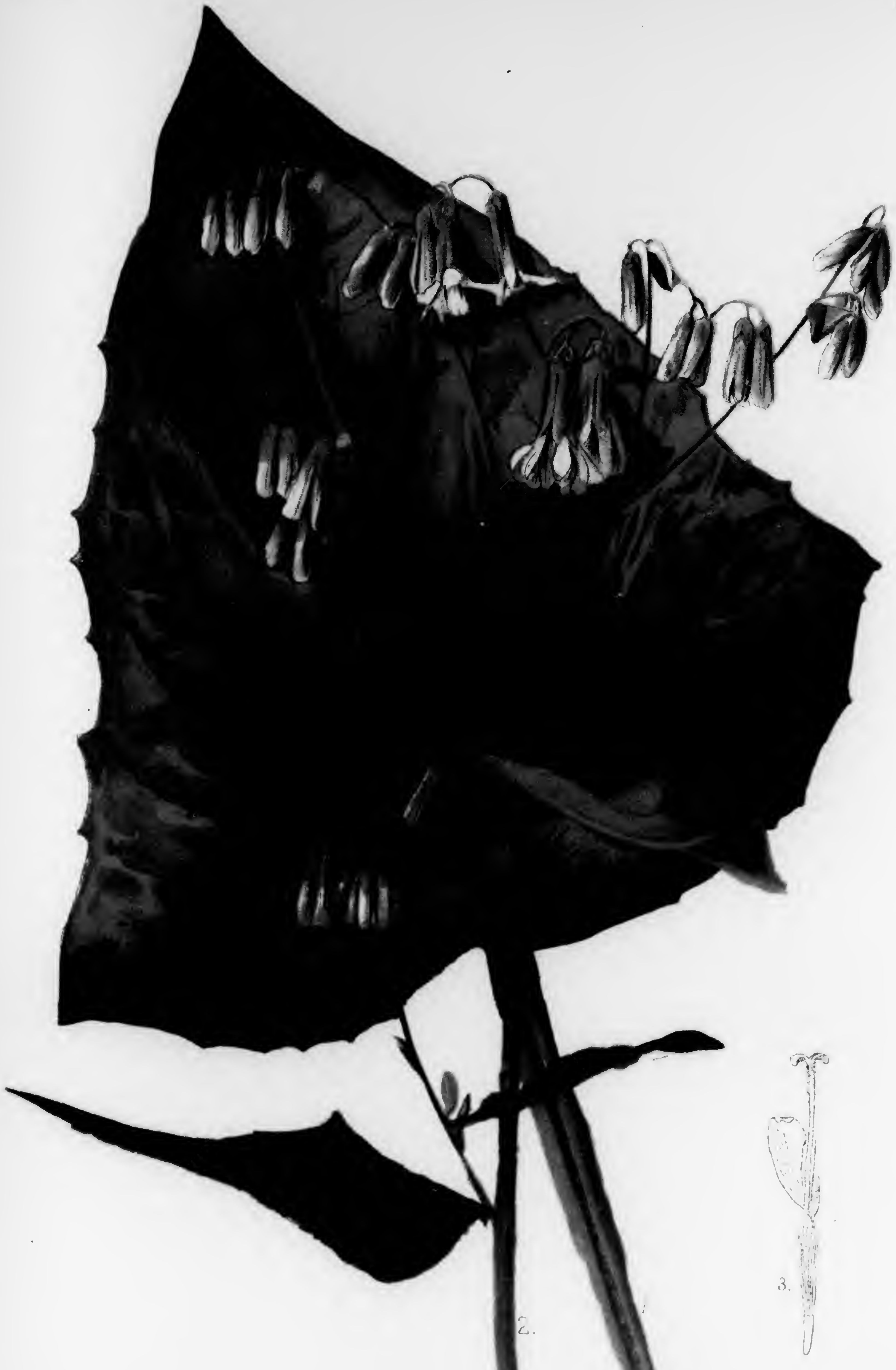
Martindale Herbarium.—A life of hard work and abundant cash, joined with high botanical attainments, can only found a great herbarium. Happy is the young student who finds one ready formed for him. Mr. Isaac C. Martindale's—one of the finest in America—is to be sold before the end of the year. It has been valued at $10,000. Mrs. M. has been asking only $8000 for it. As it must be sold it might be well for parties desiring to secure this prize to offer what they think they can afford. Her address is Penn street above Third, Camden, N. J.

Plant Names.—Botanical authors have been at war about plant names. One of the old canons of botany prescribes that the oldest names that have been accompanied by clear descriptions should be adopted. It now appears that this has not always been done. To enforce this rule in relation to what has been done the past hundred years would demand the changing of thousands of names. Authors of local works are everywhere changing the names, as they discover some prior one, until botanists have come not to know what his neighbor is talking about. Meehans' Monthly has taken the ground that it is the best on the whole to follow some ably edited lexicon, just as in some literary squabble we would let Webster or Worcester have the casting vote. It is very pleasant to note that under the lead of so able and eminent a botanist as Prof. Trelease, the Society of American Florists has adopted this view. Nicholson's Dictionary is named as their standard for plant names.

Thanks.—The thanks of Meehans' Monthly are due to Mr. P. J. Berckmans, of Augusta, Ga., for kindly notice in his beautiful catalogue just issued. Mr. Berckmans was among the first of the more intelligent members of the nursery trade to welcome the magazine, and the continued regard is appreciated.

Blue Stone and Copperas.—To save confusion it is well to state that when one asks in the drug store for "Copperas" he gets sulphate of iron. If the article for copper solutions is required, "Blue Stone" is to be ordered. The name copperas is misleading and often gets writers into trouble.

The Next Plate.—As there will yet be many species of the great order Compositæ in bloom during November, it will help in their study to give for our next illustration a picture of *Prenanthes alba*.



PRENANTHES ALBA

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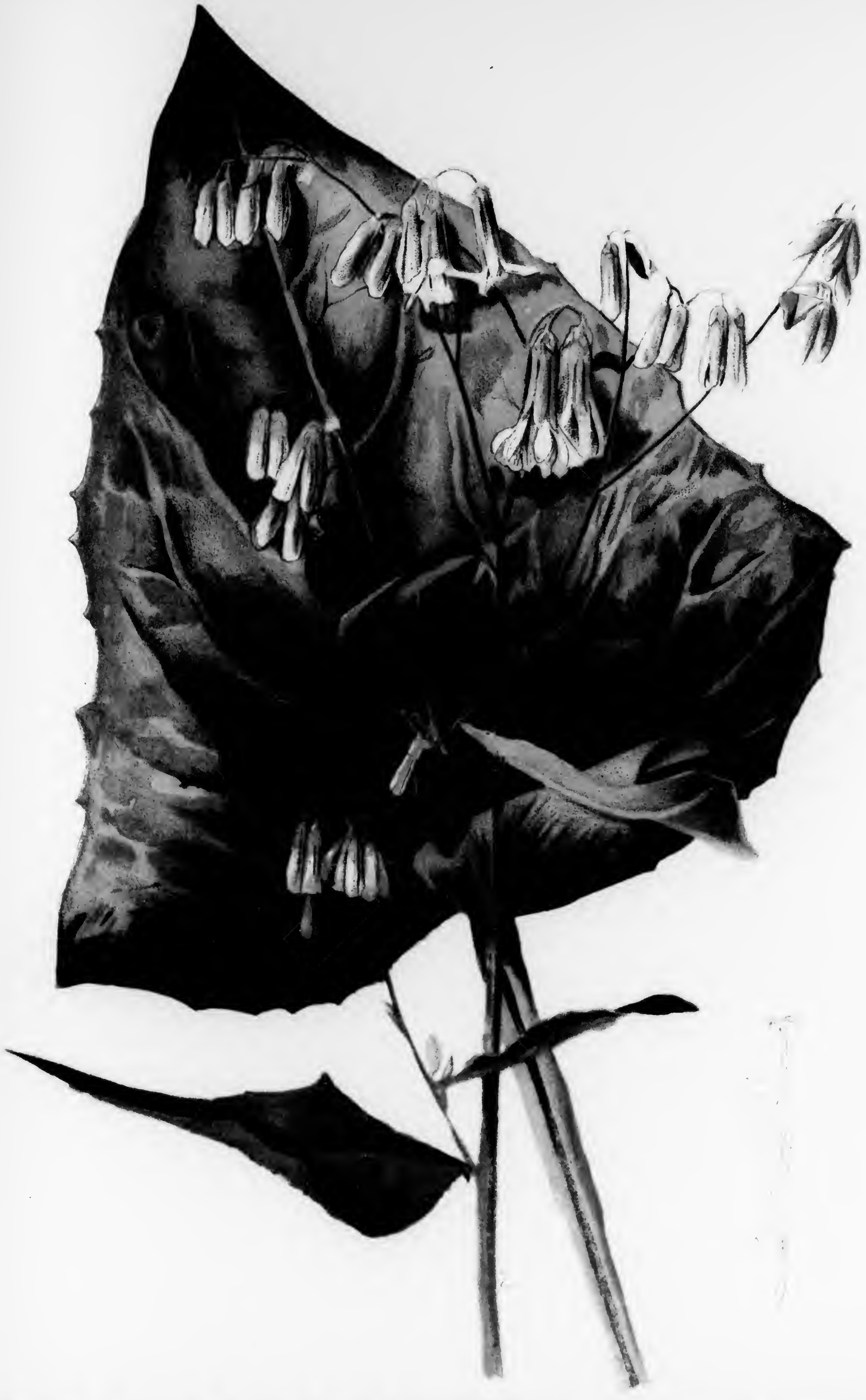
LION'S FOOT.

NATURAL ORDER, COMPOSITÆ.

PRENANTHES ALBA, LINNÆUS.—Stem rather stout, purplish and glaucous, two or three to five or six feet high, smooth, sometimes nearly simple, often much branched; leaves two to six or eight inches long, and often as wide as long, varying from triangular—hastate to palmate—lobed and pinnatifid, the radical ones large; petioles from four to eight or ten inches long; heads purplish, eight to twelve flowered, florets ochroleucous, often with a purple tinge. (Under *Nabalus albus*, from Darlington's *Flora Cestrica*. See also Gray's *Manual of the Botany of the Northern United States*, Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.)

The species now illustrated may be classed among the distinguished Americans, having had honor among the Indian races long before it was drawn to the attention of the white man. It was one of the first to attract the notice of the botanists of the old world. The "Botanical Magazine" tells us it was first introduced to the gardens at Kew in 1778, but it was well known, at least from dried specimens, if not in actual cultivation, long before this. Plukenet, an old English author, gives a drawing of it, and says it was introduced by the Rev. John Banister, who sent plants from Virginia to Ray in 1680, or near a hundred years prior to the date fixed for the appearance of the plant in the Kew collection. In those days it was classed with *Sonchus* or milk-thistles, and in these early times when there was but one name for a genus, and the species distinguished only by a long string of adjectives, we find it described first by John Josselyn in his "New England Rarities" as *Sonchus nova-anglicus*, in later works as *Sonchus Marianus*, *Sonchus Virginianus*, *Sonchus Floridanus*, and so on; that is to say, New England milk-thistle, or Virginia, Maryland or Florida milk-thistle. It was seen to vary very much, even in those days, and we have various subdivisions, not to quote the original Latin, as "the Florida milk-thistle with the leaves like an arrow;" "Florida milk-thistle with the leaves like a turnip," "Florida milk-thistle with the leaves like a sassafras" and so on. Even in later times, when a better knowledge of the plant and its power to vary had been obtained, the full extent of the variations have not been perceived, and thus we have now many synonyms which have been given to some of these variations, under the impression that they were distinct species. Even so recently as the time of Pursh, 1814, there is in his "Flora of North America" described, *Prenanthes alba*, *Prenanthes rubicunda*, and *Prenanthes serpentaria*, as distinct species, but which are now regarded as mere forms of the first named one. How much the plant varies could be readily understood if the reader could see with the writer of this, four pictures before him which have been made of this plant. The earliest one by Plukenet has a panicle of flowers somewhat corymbosely branched, that is, flattened at the top, and the heads rather few flowered—in these respects agreeing with our plate, but while ours has the leaves all entire, Plukenet's is very much divided. The "Botanical Magazine" has a form that must be but seldom seen; the flowers are made to appear almost horizontal, looking at us as it were, instead of hanging on slender pedicels, as in our plate, and having the large white ligule bent so far back over the bright rosy involucral scale, as to look almost like the famous daisy flower of the poets. Then there is Pursh's illustration, which has the flowers much as in ours, only they are arranged more wand-like, while the leaves are deeply divided into numerous irregular lobes.

Not only has there been difficulty in distinguishing the species, there have also been doubts as to the proper limits of the genus. We have seen that Linnæus and his contemporaries regarded our plant as a *Prenanthes*. In 1817, Rafinesque believed some of the species had the pappus feathery, while those generally seen had the pappus bristly. On this he proposed to erect a new genus under the name of *Esopon*. This was not acceptable to other botanists. In 1825, Cassini made another at-



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INTENTIONAL SECOND EXPOSURE

tempt to divide the genus. Some have but three to five flowers in a head, but four to six leaves in the involucre, and the style but little protruded beyond the anthers. Those with these and some other slight characters were left as *Prenanthes*. But there were others with five to twenty flowers in a head, eight to ten leaves in the involucre, and the style very much exserted. These were arranged as another genus, which he named *Nabalus*.

The original name *Prenanthes*, is derived from two Greek words, *prenes* drooping, and *anthos* flower, so many species having pendent blossoms. *Nabalus*, in like manner, seems to have been suggested by the appearance of the leaves of many species which are, as already noted, often lyrate or lyre-like, *nabla* being a Greek word for harp. At the time of writing this chapter, our plant will be found under *Nabalus* in all American works, but more recent European authors have abandoned the genus, and referred the species back to the original *Prenanthes*, and our plant is now *Prenanthes alba*.

From a geographical standpoint it might be regretted that good botanical characters could not be found for the separate names, as all the species ranged under the name of *Prenanthes* are European or Asiatic, while *Nabalus* are all American.

The plant seems to have been popular as a medicine with the Indian races. Many Indian remedies have proved no more efficacious than the remedies of the white man, but it is worth noting that much credit has been given to this plant for its virtues, by many modern observers. Pursh was so impressed with its value, that he gave a drawing of it in his "Flora of North America," and says: "this plant is known by the inhabitants under the name of 'Lion's-foot,' and is in high esteem as a specific in curing the bite of the rattlesnake. During my travels through the mountains of Virginia, I had the opportunity of being a witness of the efficacy of this remedy. A man living in Cove Mountains, near the Sweet Springs, was bit in the foot by a mocassin snake, a species considered the most dangerous. An inflammation and swelling of his whole leg took place immediately, but by taking the milky juice of this plant boiled in milk, inwardly, and applying to the wound the steeped leaves, which were very frequently changed, he was cured in a few days. As this plant deserves the attention of the physician, I have given a figure of it, it being frequently confounded with another species of this genus, which probably may not have as strong an effect, as the inhabitants are very careful to have the true Lion's-foot, in case of accidents happening, and usually call the other species of *Prenanthes* "False Lion's-foot." Gronovius in his "Flora," page 113, mentions Dr. Witt's Snake-root under *Prenanthes autumnalis* or Willdenow's *rubicunda*, as a remedy for the bite of the rattlesnake; which shows that he had information of the use made of this plant, though he did not know the genuine species. In the *Banksiana Herbarium* is a specimen of *Prenanthes rubicunda* with the following note in the hand-writing of Clayton: "This is the rattlesnake root that Dr. Witt supposes to be the best cure for the bite of the snake; a very odd plant, hardly two leaves alike upon a plant as to the shape or the indentings of the leaves." In regard to Pursh's anxiety about the true kind, we now know that most of these forms are but mere varieties of *Prenanthes alba*, and, as it is now also known that the bites of these venemous snakes, though often fatal, are not necessarily so, faith in any real value in the plant has been much diminished. It is indeed doubtful, whether any thing cures snake bites,—recovery being due chiefly to the vital resisting power of the blood, than to curative virtues of any plant. The root is intensely bitter and among its earlier common names, "Gall of the earth," is reported by Dr. Brickell of Savannah. Dr. Torrey also mentions "White Lettuce" as a common name. Rafinesque in his "Flora of Louisiana," refers to the yellowish flowered variety as being called chicory, and "used in Louisiana in decoction instead of chicory." In his "Medical Botany" he says, it is used in cases of dysentery. In some of its forms it is found over most of the Eastern portion of the United States. Our specimen was from woods near Philadelphia.

EXPLANATION OF THE PLATE.—1. Stem leaf from near the ground. 2. Upper portion of a flower stalk. 3. Magnified floret, showing the long style.

WILD FLOWERS AND NATURE.

"DOWN TO SLEEP."

November woods are bare and still,
  November days are clear and bright,
Each noon burns up the morning's chill,
  The morning's snow is gone by night.
  Each day my steps grow slow, grow light
  As through the woods I reverent creep,
  Watching all things lie "down to sleep."

I never knew before what beds,
  Fragrant to smell and soft to touch,
The forest sifts and shapes and spreads.
  I never knew before how much
  Of human sound there is, such
  Low tones as through the forest sweep
  When all wild things lie "down to sleep."

Each day I find new coverlids
  Tucked in and more sweet eyes shut tight
Sometimes the viewless mother bids
  Her ferns kneel down full in my sight.
  I hear their chorus of "good night,"
  And half I smile and half I weep,
  Listening while they lie "down to sleep."

November woods are bare and still,
  November days are bright and good,
Life's noon burns up life's morning chill,
  Life's night rests feet that long have stood,
  Some warm soft bed in field or wood,
  The mother will not fail to keep
  Where we can "lay us down to sleep."

—HELEN HUNT JACKSON.

CARNIVOROUS PLANTS. — A correspondent from Highlands, N. C., would like to know for certain whether such plants as *Sarracenia*, *Drosera*, *Dionœa* and others, famous as carnivorous plants, do really catch insects and eat them—that is to say, do they absorb the plant food by their own cell-structure or not? In the case of *Sarracenia* the correspondent doubts whether the insect in the pitchers is really converted into plant food. It is, perhaps, fair to say that it is an open question, whether the insect caught by the pitcher plant be really used by the plant or not.

Parasites deposit their eggs in the pitchers, and make use of the insect caught by the plant; this is certain, but it has not been shown beyond all possibility of doubt, that the plant makes use of the insects as do the parasites. Too much has been made of the supposition that because plants behave in certain ways, the behavior is intended expressly for their own good. All nature is evidently arranged so as to work for ulterior purposes as well as for immediate ones, and it is by no means selfishness that is the basis of life's action. In regard to the other plants named, however, it is absolutely certain that they absorb food through their tissues in the manner claimed for them. There is strong reason to believe from the careful experiments of Mr. Darwin, that plants absorb nutriment from the atmosphere through means of their glands. There is very little reason to doubt that the innumerable sticky glands on the tomato aid largely in sustaining the plant, and this is believed to be the case with all plants having glandular structures. There is, however, a wide field open for careful observations in this line. Nearly all that is known has resulted from Mr. Darwin's elaborate experiments. Should some similar careful observer arise, he would yet find abundant material for interesting essays.

PRESERVING FLOWERS UNDER LOW TEMPERATURE.—In America it is now well known that plants can be kept for a considerable time in a very low temperature. All florists in a moderately large business use cold storage rooms or closets to preserve their flowers. Fish and meats are also preserved for a long time under similar conditions. In an actually frozen condition, however, possibly no commercial use could result, because, on thawing, the flowers would turn black, and yet this fact has been turned to some good use. Flowers have been sent all the way from Sidney in New South Wales to London, in a transparent block of ice, and possibly some plants might be preserved for indefinite periods under these circumstances. Where it would be necessary to have such flowers preserved, one can see how valuable these experiences are. Of course, the flowers would be of no use after the ice block thaws.

CONCERNING PRICKLY PEARS.—In the account of *Opuntia Rafinesquii* in the June number, the writer states that he is not aware that its present range is north of Nantucket. But westward it extends considerably north of that limit at the East. The latitude of Nantucket is about 41° 30′. The Prickly Pear grows on Point Pelee, a sandy projection of the north shore of Lake Erie near its west end, and at the head of Lake Michigan, in latitude 42°. In Michigan it is found on sand hills on the Muskegon river and in Barraboo, Wis., at about 43° 30′. In Minnesota it occurs on rocks at Taylor's Falls, on the St. Croix, as well as on the opposite side in Wisconsin. In central Minnesota it is reported near the Mississippi a little south of St. Cloud. The latitude of the last three localities is about 45° 30′, and marks its northward limit, so far as I can learn. This is also the latitude of the northern part of Nova Scotia, and it shows the probability that the plant figured by Miller may have come from there according to his statement, since it is not too far north for it to grow. Still farther west *Opuntia Rafinesquii* is found in the valley of the Niobrara in northern Nebraska, at about the same range as on the Muskegon, in the basin of Lake Michigan. *Opuntia Missouriensis* appears to range the farthest north of any cactus. Macoun reports what he takes to be this, from the banks of Peace river, a tributary of the Mackenzie, in latitude 56° 12′. "It grows on the arid clay slopes, exposed often to a temperature of 55° below zero." *Opuntia Rafinesquii* must sometimes be subjected to a temperature of 30° or more below zero in Minnesota, unless covered by snow. Its limp condition and shrivelled appearance in the winter are very noticeable here in the lake region. It generally lies nearly flat upon the ground, partly covered by the sand, and dead leaves heaped about it by the wind, which its spines and jointed stems serve well to hold in place. The fruit is quite palatable when fully ripe, but so drastic that it needs to be eaten sparingly.

Probably the *Opuntia* found by Capt. Back, on the Rainy River, was *Opuntia fragilis*. Keating states in his account of Long's Expedition that a Prickly Pear abounded on islands in the Lake of the Woods, which has lately been identified as this. Rainy River flows into this lake. E. J. HILL.

EVOLUTION OF LEAVES.—Mr. John W. Dunlop remarks : "Mrs. Kellerman's observations on *Viola cucullata* var. *palmata* are no doubt very fascinating, although there are many things still unexplained, and if at her leisure she would enlighten me on some of the facts to be mentioned I will think myself indebted to her. Some twelve years ago when collecting plants on Racine Prairie, I found a plant of *V. palmata* which I planted in my garden. It stood in the same spot for nine years, a large, strong plant with fine palmated leaves. Its flower stems with small petals never arose higher than the surface of the soil, and in every way it was as unlike *Viola cucullata* as it possibly could be. It seeded freely, with seed pods as large as *V. pubescens*, but so hidden under the leaves, that, except you looked for them, you would not have seen them. Now, have you ever seen *V. palmata* bloom? If you have, was it like *cucullata*, or did it bloom as I have described my plant? I have seen many plants on Racine Prairie, but I never saw one of them in bloom in their wild state.

"*Hepatica triloba* after being grown two years in a box, became *acutiloba*, and this season I found some beautiful maculated *H. triloba* which have already lost their markings, and I expect them to lose their round leaves. *Hepatica triloba*, when found, is always on limestone ridges, and when moved off into loamy soil, it assumes the character of *H. acutiloba*. Be sure you try a plant of it under cultivation."

FALL FLOWERS.—In the eastern portion of the United States there are always some few flowers that come to blossom only just before the frost appears; some orchids, gentians, asters and others are familiar examples. In every part of the world there seems to be the same arrangement. In bloom at the present time in flower borders is a plant which is getting to be known under the name of East Indian Lily, botanically *Tricyrtis pilosa*; the flowers are white, but profusely covered with purple dots. These are opening just as the frost is appearing, and they would no doubt have the same peculiar effect in the autumn scenery of the Himalayan Mountains as a Fringed Gentian would have with us. The Maximilian Sunflower of Nebraska, seldom opens till October, when it is a blaze of beauty.

NOCTURNAL CREATURES.—Following in the line of what was said of owls in a recent number, the following from the New York *Independent* will be appropriate.

Nocturnal creatures are generally supposed not to see well in the daylight, but facts collected are gradually dispelling the idea. It is well known that felines, which see well by night, seem to be able to see quite as well by day; and this is being found true of many other creatures. The bat sees admirably by daytime, as any one can ascertain by threatening it with a twig. The owl, also, has first-rate day sight. Night-flying *Lepidoptera*, when disturbed in their places of refuge during the day, have no difficulty in seeing at once where is the nearest and best place for a temporary refuge. These and similar facts are being made use of by those interested in the study of development. It might be assumed that all were originally light-lovers, but protective considerations, or better chances of getting food, led to the development of the night-roving disposition. The owl, for instance, is hated by all birds. When one is discovered by other day-loving species they subject it to the direst persecution. Owls could scarcely live as a day-loving bird under the present order of things. It would be driven from the earth; and, supposing it took on gradually its thieving habits for a living, it has had to love darkness rather than light because of these evil deeds. At any rate, the naked fact seems to be that night-working creatures can generally see well in the day-light when they want to.

GREASE WOOD.—Common names of plants are frequently pleasant and attractive, and when any such names become common even the driest botanist prefers to use them,—but when names are not so much common as local, much confusion arises. In Colorado, as the writer of this found in its early history,—the *Rhus aromatica* was known as "grease wood." In Nevada, to-day, the "grease wood" is *Grayia polygaloides*,—and no doubt there are numerous other "grease woods" in other sections where plants exude a greasy secretion.

COOL ORCHIDS.--SEE P. 167.

FLOATING ISLANDS.—Floating Islands are not uncommon. There is one in Cranberry Lake, near Arden, N. H. The writer of this paragraph well remembers chancing on one in his younger days. He was collecting plants without any idea that he was on floating land, and yet, when he was returning, he was amazed to find one hundred feet of water in his line of travel. This island was really floating. Large trees, as well as small vegetation of many varied kinds, were just as abundant on this floating island as on the ordinary dry land. But it was an island and the wind changed while he was searching for plants,—causing the island to float to the other side of the lake from which it had been a few hours before. These islands originate in a very small way, just as a large oak will grow from a very small acorn. Drift wood will become covered with leaves and moss; sand will then blow in among the moss and leaves,—seeds of trees and other kinds of vegetation are then brought by the same method in among the sand, and are carried there by the feathers of birds or the fur of animals, or even will float on the water until they reach the spot, then the amount of wood and light vegetable matter will accumulate sufficient to float the trees and vegetation which grow on the surface. These special phenomena in Nature are always interesting to the young as they furnish from time to time a clue to the mysteries in Nature.

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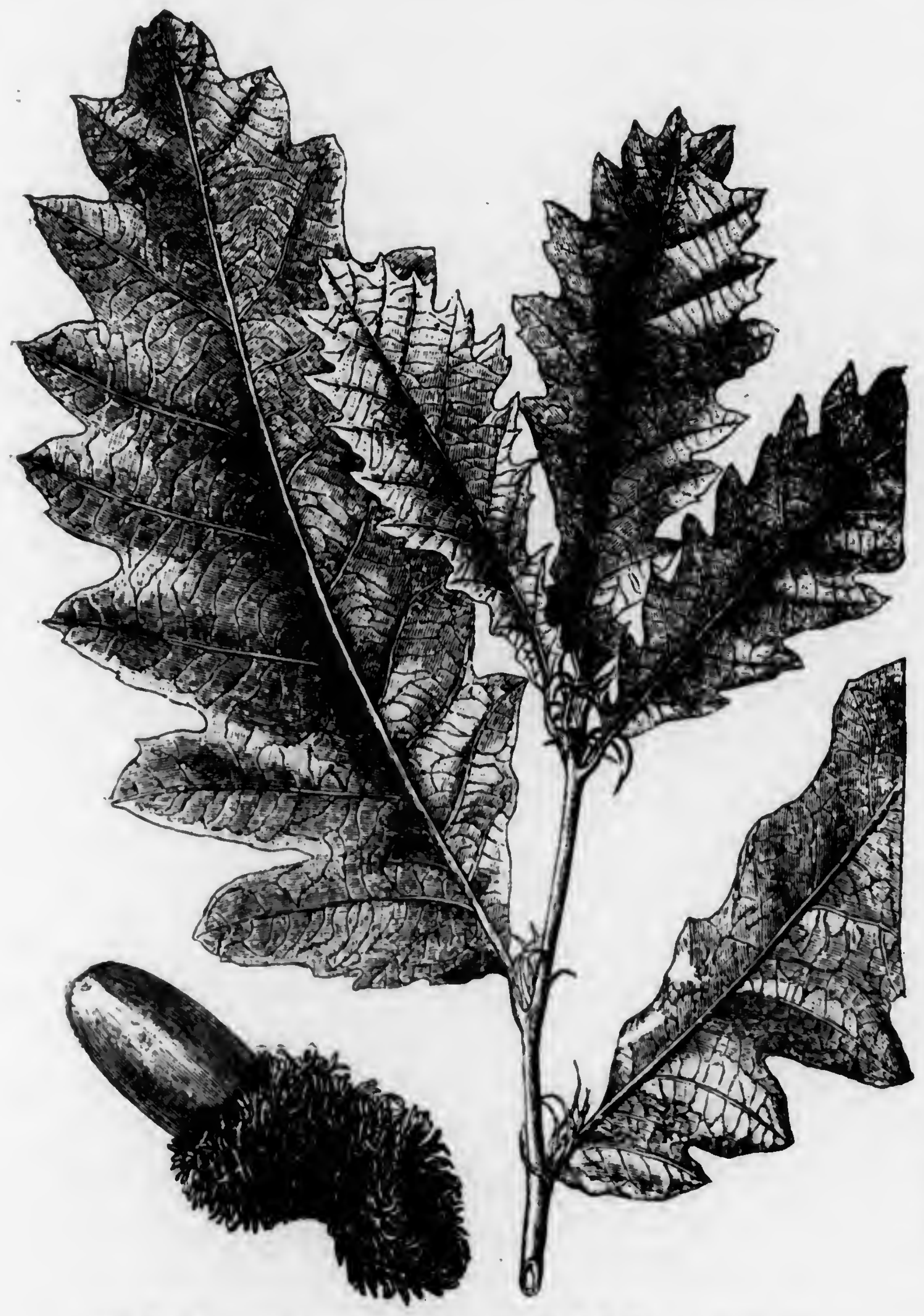
INTENTIONAL SECOND EXPOSURE

Jussieua repens.—In a letter to the conductor, Baron Mueller calls attention to the general writing of this name as *Jussiæa* as being incorrect. In our copy of Linnæus' "*Genera Plantarum iabam ex museo Cliffortiano, 1736*" and referring to Rheede's "*Hortus Malabaricus,*" it is written *Jussieua* as Baron Mueller suggests. He asks the aid of American botanists in settling a question of great geographical importance concerning *Jussieua repens* credited to our continent. The plant we believe to be the one that he thinks is Forskall's *Jussieua diffusa*. The genuine *Jussieua repens* has white petals a little yellowish at the base in the manner of *Ranunculus aquatalis*. Torrey and Gray describe the American species as having bright yellow flowers, as also has the Australian plant. *Jussieua diffusa* is a larger plant than *Jussieua repens* and has other differences. It is very desirable to know whether the American—presumably *Jussieua diffusa*—is identical with the African and Australian species.



TURKEY OAK.--QUERCUS CERRIS.--SEE P. 167.

The Snow Plant of the Pacific Coast.—Recently contributors to MEEHANS' MONTHLY have shown that the Snow Plant is not an annual, as has generally been supposed; it is certainly a plant living more than one year, if not for several years. In addition to what has been already stated Mr. Charles H. Douglas, of Waukegan, Ill., remarks that he found specimens of it in November last on the coast range of mountains in south western Oregon. Some had seeds perfectly ripe, while others had a large mass of coralline matter, the size of one's fists, several inches above the ground,—other specimens of coralline matter were no larger than one's thumb. In the ground below the surface a number of smaller masses would be found. Mr. Douglas believes that these masses continue to grow for several years before flowering,—three years certainly. The flowers also vary from a deep carmine to chocolate color. Mr. Douglas asks why call it the Snow Plant of the Nevada, when it is found over such a wide extent of territory? The only reason that can be given is that this was the name by which it was originally called,—very few names would hold for critical analysis.

Monarda punctata.—*American Gardening* has a pleasant word to say in praise of this interesting wild flower. In its color it is rather dull, but the bracts which surround the flowers, give it an attraction which would otherwise be wanting. In very large masses, as seen in New Jersey, the effect in wild flower scenery is very pretty. The remark of our contemporary that the spotted flowers, standing upright on the bracts, have the appearance of a number of squirrels resting on their haunches, is particularly apt and appropriate.

Forests of Apple Trees.—In the Sandwich Islands the apple has became wild, and forests of trees of many acres are found in various parts of the country. They extend from the level of the sea far up into the mountain sides. It is said that miles of these apple forests can occasionally be seen. One traveller gives the extent of one of them as between five and ten miles in width and about twenty miles long.

GENERAL GARDENING.

THE MOSS-COVERED WALLS.

"The moss of many a year was undisturbed
Upon the stained walls of Aldornere,
And now the many-colored autumn leaves
Lay thickly strewn in all the woodland-ways.
There was the warbler busy all day long
Among the bowery deeps of shadowy elms
Slow fading in the autumn's paly gold,
And his continual ditty on the ear
Fell like the silver voice of woodland stream."

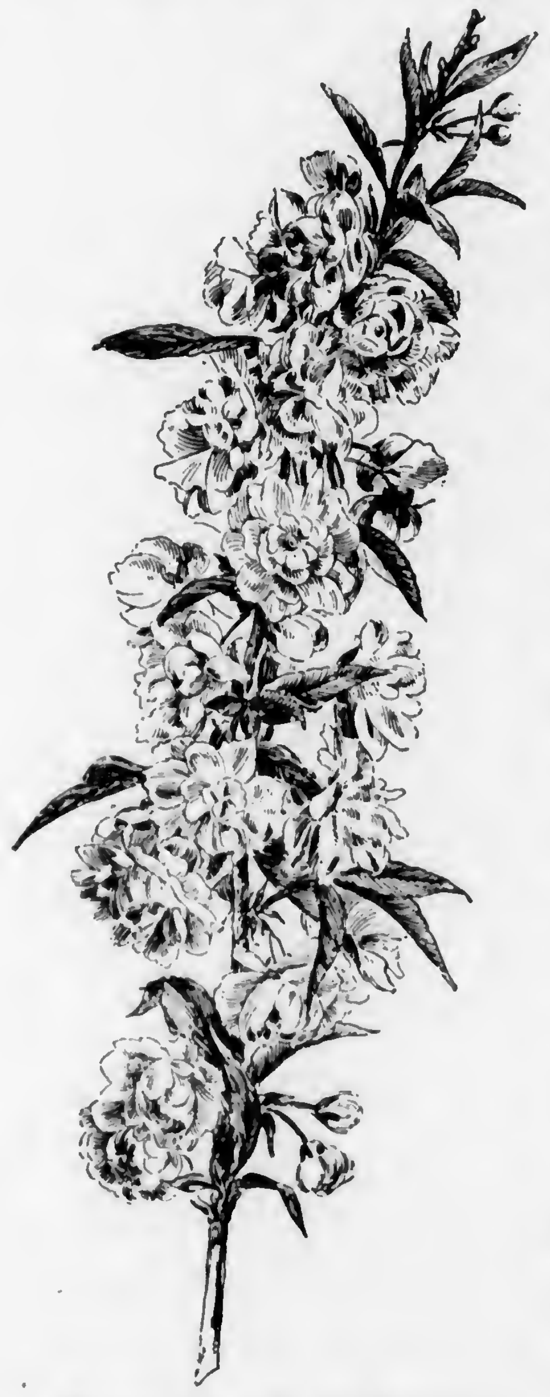
—HOWARD WORCESTER GILBERT.

Cool Orchids. It is not generally known that many of the Mexican orchids, and orchids from the higher elevations of tropical countries do not require the skilful care that those from the more warm regions require. Some indeed do very well suspended under trees in parts of gardens or near buildings where the air is still and not too dry; and a temperature not above that of ordinary sitting rooms will give them good satisfaction during winter. The genus *Stanhopea*, is particularly suited to this easy going culture. They are planted in baskets of peat, rotting wood, and moss; and the flowers push out through the meshes, at different seasons of the year, according to the species. The flowers are very large and sweet, and have a waxy texture. The forms of the flowers are exceedingly curious, representing one would say, some curious creature; more however, resembling legendary dragons, than any found in the zoological gardens of the present time. The cut was made from a plant grown by a zealous Germantown amateur, Mr. H. Cramer, and is represented hanging from a honeysuckle trellis on the front piazza.

Improvement of the Carnation.—For many years when carnations were grown simply for their beauty as cut flowers little attention was given to any other point except to their fragrance, tints and color, or size of bloom. When they were cut for florists' purposes, artificial stems had to be given to each flower. This made it very troublesome to florists and besides prevented the general use of the carnation in boutonieres, because for want of stems there was no opportunity to put articles retaining moisture around the stalks by which withering could be prevented,—they were soon, therefore, useless. American florists, however, have turned their attention to developing carnations which produce flowers singly on long stems, and yet will stool up so as to give bushy, stocky plants, producing these long stalked flowers in the greatest abundance. So successful has the improvement of the carnation been in this way, that no one ever thinks now of buying carnations except with stalks often five or six inches in length. It is interesting to note that this particular kind of improvement does not seem to have been appreciated by improvers in the old world, as the popular carnation for florists' work is still one which was raised in France nearly 20 years ago, known as *Souvenir de la Malmaison*. This produces one enormous flower, often times 1½ inches in diameter at the top of the stalk, with numerous short stalked-buds along the main stem. No florist here could make his salt out of the cultivation of such a carnation. Little instances like these show the immense advance made by American florists in certain lines of improvement over the progress which the same thing has made in the old world.

Turkey Oak.—The oaks are all admired for the beauty of their foliage and for their varied habits of growth. In modern gardening the demand for the different species has of late years been very large; but it might be as well to call attention to the beauty of the fruit, which is seldom wholly overlooked by lovers of the oak tribe. The English oak, especially *Quercus robur*, or the Royal Oak, is never more beautiful than when covered with its lovely acorns in the fall of the year; and architecture and sculpture have been considerably indebted for models which these acorns have furnished. Another European oak, which has beautiful fruit, is not so well known in America as it ought to be, namely, the Turkey Oak, *Quercus*

Cerris, see page 166. The cup is completely covered with the appearance of moss, and the proportion between cup and acorn is considered remarkably beautiful from an artistic point of view. We have Mossy-cup oaks of our own which are also beautiful in their own particular style; but the particular characteristics of beauty in the Turkey Oak are unique.

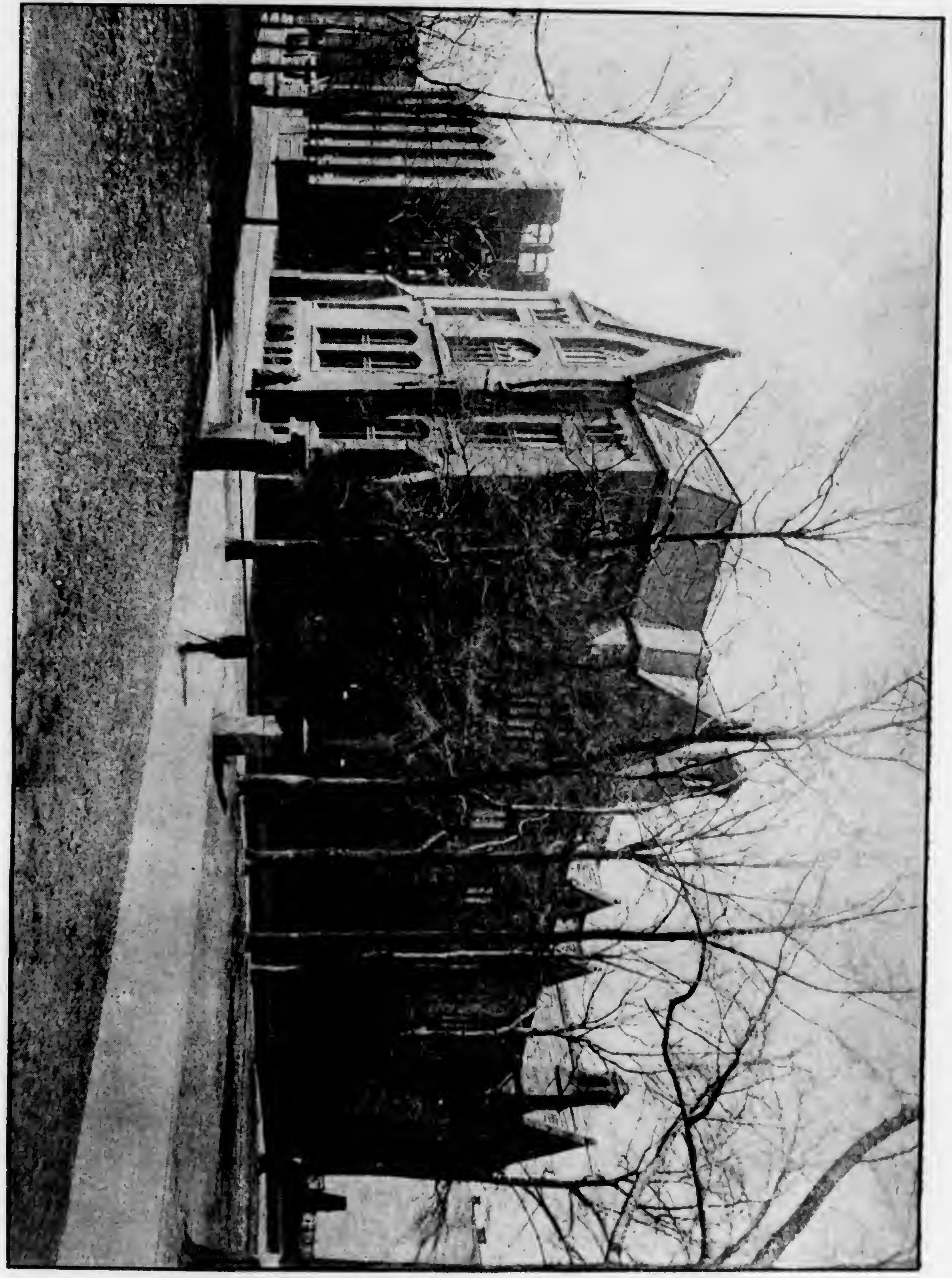


FLOWERING ALMOND.

The Double-Flowering Almond.—Many years ago few things were more sought after for the decoration of gardens then the double-flowered Almond, of which there are two forms, one pink and the other white. Few gardens of taste but had specimens of this plant. Although called dwarf Almond, it is a wholly different species from the Almond of commerce, and no one would recognize by the look of the plant that it belonged to the Almond family. It is one of those cases of a plant brought from another country in a double-flowering condition, and of which the single form is not known, consequently the fruit from these double flowers never comes to perfection, and the plant, therefore, gives no intimation of its close relationship with the Almond family. It is beginning to disappear from gardens chiefly from the operation of the peach borer, which attacks it as badly as it does the peach or the Almond. This has been the chief cause of its disappearance from gardens. Another cause is the attack of a species of parasitic fungus, which will destroy frequently the whole plant in a night, just as the disease known as the fire blight takes off the pear. As the pear and the Almond are all of the same family, it is not unlikely that the fungus which does this damage is of the same species, or a closely allied one to that which does so much mischief with the pear tree. In order that the public be made acquainted with the beauty, half lost in this case, we give a figure of a flowering branch, so that people may not forget the things which have given them so much pleasure in the past, as well as to induce them to look into these troubles and diseases, and ascertain if there may not be some remedies easily applied, by which these beautiful flowers may be preserved to us.

Herbaceous Grafting.—Prof. L. H. Baily of Cornell, has been grafting the tomato on potato plants, with the result that the upper portion bore tomatoes, and the lower portion bore potatoes. This seems natural, and yet it is in direct opposition to experiments, which have been reported as having been made in other countries, where the result was said to be an intermixture of the two, and the facts have been brought forward as illustrating what is known as graft hybridism. The result of Prof. Baily's experiment does not show that the other experiments have been misreported or misconstrued, but it certainly does go to show the value of continually repeating experiments which are said to produce such unique results. Prof. Baily found that peppers could be grafted on tomatoes, and that tomatoes could be grafted on peppers, and that these, including egg plants, would grow when grafted on the Alkekengi. It should be remembered, however, that all these plants are of the same natural order, and very closely related,—all belonging to *Solanacæa,* and there is no more surprise at this result than the grafting of the Pear on the Quince, or the White Thorn. In the use of material for this herbaceous grafting, Prof. Baily notes that the wood must not be too young, but rather on the approach to maturity.

Poison Vines.—Ignorant people in the north often frighten themselves by mistaking the Virginia Creeper—*Ampelopsis quinquefolia*—for the poison vine—*Rhus radicans.* Mr. Walter N. Pike, of Jessamine, Florida, writes that in the Southern States the perfectly innocent Trumpet Vine—*Tecoma radicans*—is also mistaken for it. But what can we expect when a whole town writes itself Jessamine instead of Jasmine?



ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA.—SEE P. 174.

New Hall and Museum being constructed in the rear.

Cerris, see page 166. The cup is completely covered with the appearance of moss, and the proportion between cup and acorn is considered remarkably beautiful from an artistic point of view. We have Mossy-cup oaks of our own which are also beautiful in their own particular style; but the particular characteristics of beauty in the Turkey Oak are unique.

FLOWERING ALMOND.

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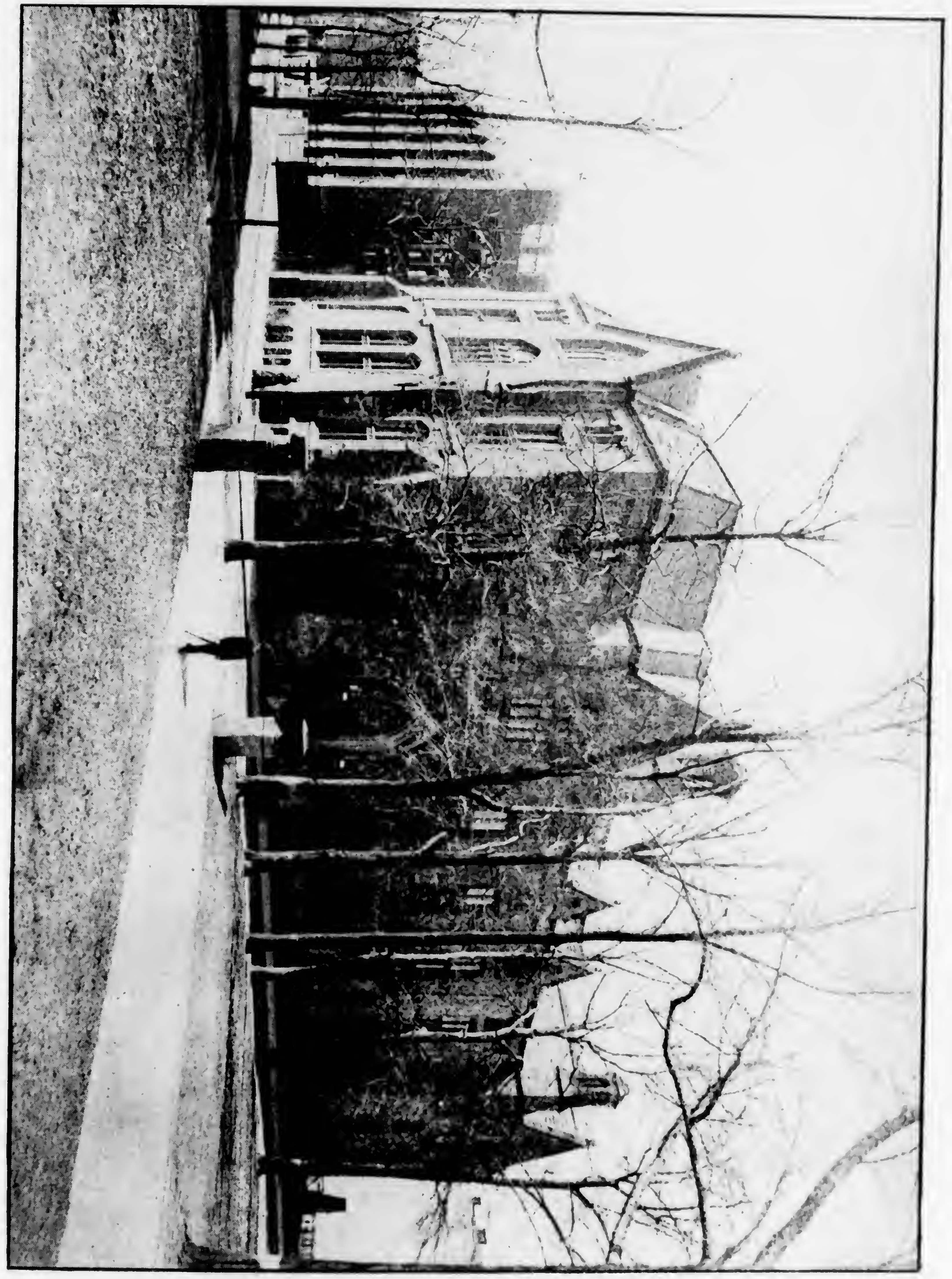
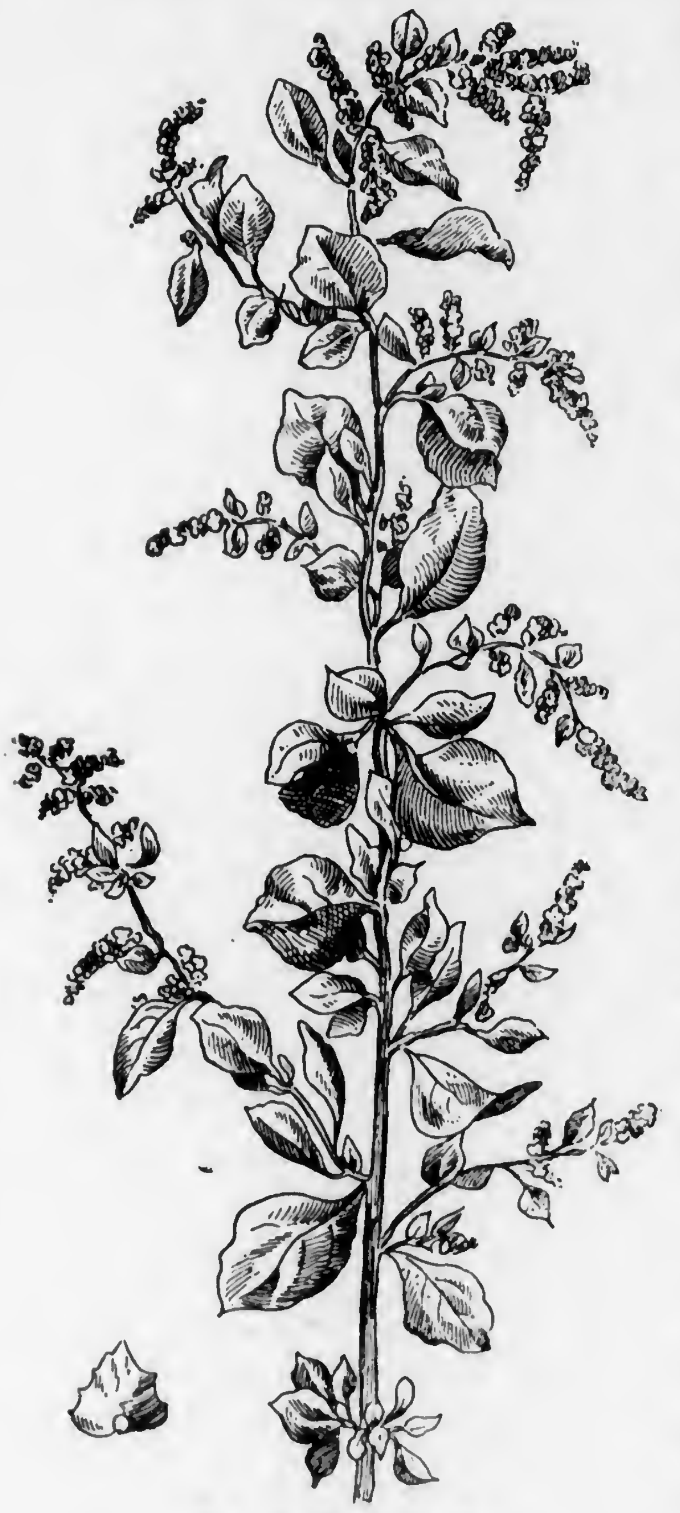


ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA.--SEE P. 174.
New Hall and Museum being constructed in the rear.

INTENTIONAL SECOND EXPOSURE

SALT BUSHES. — Plants that will resist drought and saltish soils on deserts and dry places generally, are comparatively scarce, and those who discover the adaptation of certain plants to such localities are doing good service to mankind. One of their "Salt Bushes" in the Old World is *Atriplex Halimus;* but probably one of the best known is the Australian species, *Atriplex halimoides* more recently called *A. nummularia.* There are many localities in America where the introduction of this plant would be of great benefit to our agricultural interests.


SALT BUSHES.

The "Agricultural Journal of Cape Colony" in its issue of the 18th of May, gives an interesting account of the successful experiments made in that portion of the world, where the Australian plant has been introduced through the indefatigable Baron von Mueller of Melbourne. The plant has been found of so much value there, and so well adapted to the peculiar conditions, that the demand for the seed has been found far beyond the supply. There is a demand, not only by the settlement, but from outsiders in the belief that the plant will be found of inestimable benefit wherever there are dry or salty conditions. The plant has bisexual flowers, as in all *Chenopodiaceæ*, on the same plant, and occasionally plants with distinct sexes on separate plants. The illustration with this is of a male plant. It will be seen that this species differs from the *A. Halimus* in having the flowers scattered over the whole plant instead of their being simply terminal as in that species. There are, of course, other distinguishing characters. We give this matter prominent attention, as we think it will be to the interest of our people who may have dry or salty soil, to introduce the plant. It has been one of the reproaches of American gardening, and American agricultural enterprise that they are usually far behind other sections of the world in introducing and testing valuable plants that would possibly be in the best interests of agricultural progress to try.

CULTIVATION OF ORANGES.—A recent traveler in China and Japan notices that in those countries the orange trees are not grown as we grow them in our country, by training them up to good stems and allowing them to have large and bushy heads, but are suffered to grow low, crooked and stumpy like, more like bushes than as trees such as ours present. The traveler states that the reason given for this by the Asiatic cultivators was that it was much more easy in this way to gather the fruit, and for that reason it was cheaper and more economical to train the trees so than in the form of trees as our orange cultivators do; but this could scarcely be the reason, as the labor in those countries is so excessively low that the extra cost of a ladder and baskets to gather them could scarcely be an item in the calculation. We have recently come across some account of an experiment by an orange cultivator in California, who allowed some of his trees to grow low and bushy, as the cultivator might say "straggling," and had alongside the other trees trained up as if they were apple trees in the ordinary manner of an orange grove, and to his amazement he finds that these unpruned trees, suffered to grow in this way, are more than doubly as productive as those which have been subjected to the pruning necessary to give them an ornamental character. It is more than likely, therefore, that it was this productive character rather than the mere saving of labor which has lead the Chinese and Japanese to adopt this method as their universal plan of cultivation.

PUBLIC PARKS IN THE OLD WORLD.—There are thirteen public parks and squares in Turin, a city of only 300,000 inhabitants, says Mrs. Trowbridge, in the Detroit *Christian Herald.*

SIGHT IN PLANTS. — A correspondent asks whether plants can see or not, and suggests that as plants will turn their tendrils in the direction of something to cling to, that may indicate that plants can possibly see. It is certainly a fact that the proximity of something to cling to will make parts of plants turn in that direction. There is evidently some attraction, but as for seeing as we generally understand by sight, this is of course, entirely out of the question. A very pretty experiment may be made by placing stakes in among a mass of garlic. The leaves will in many cases, be found twisting around the stakes, occasionally clinging tightly to them, but, as generally seen, the garlic would be the last thing we would think of as having a twining habit; and yet we see by this that when there is a chance to twine they evidently know that the chance is there. It is not sight, but it is some remarkably attractive power. What the nature of that power is has not yet been determined.

MAGNOLIA ACUMINATA LEAVES. An extraordinary large leaf of the *Magnolia acuminata* was recently laid on our desk. It measured 16¼ inches in length, and 12 inches in breath.

This leaf was taken from a two year-old plant, six feet high, transplanted last year. Other plants along side of this one, which were raised and transplanted at the same time, with precisely the same treatment, had the usual sized leaf.

We should be glad to hear from any one having noticed such large leaves before.

HYDRANGEA PANICULATA GRANDIFLORA.—Most persons prefer the variety *grandiflora* of the *Hydrangea paniculata.* Its large, heavy bunches of flowers are certainly very striking. Not a few, however, prefer the original *paniculata.* The light, feathery spikes of flowers are in striking contrast with the heavy bunchy mass which characterizes the improved variety.

ROHDEA JAPONICA. — The Journal of the Japan Horticultural Society, devotes a whole page to the praise of this as a window or room plant. So far as we know it has not been introduced to America. There appear to be numerous varieties. It is an aroid, and has been known as *Orontium Japonicum.*

FRUITS AND VEGETABLES.

SEEDLESS GRAPES.—Most of our readers probably know that the currant of commerce is not the currant of our small fruit gardens, but a variety of grape which fails to produce seed. During the last few years another variety of seedless grape has become common in California, and which is known as the Sultana. These are now becoming quite as common in grocery stores as the kind of the old world. They are paler than the European currant, but are more highly appreciated for some classes of culinary work than that kind. Just why it is that these grapes fail to produce seed has never been definitely determined. The grape, however, is not the only fruit that produces berries without seeds, as we find this deficiency in many classes, but in all cases these so-called fruits rarely reach half the size of those that are capable of producing perfect seeds. In many varieties of native grape a number of berries will be found of smaller size among the larger ones, and in such cases these also are seedless.

GROWING FILBERTS AND HAZEL NUTS.—Inquiries frequently come to MEEHANS' MONTHLY in regard to the probability of profitable culture of the Hazel and Filbert nuts. Trees growing by themselves seldom produce large crops, on account of the different periods at which the catkins mature, and the bearing flower opens. In order to get them successful, therefore, they have to be grown in large quantities together. Of all trees Filberts are the most gregarious. When numbers are planted in an orchard by themselves they bear remarkably well. The best situation is one exposed to the north, as the southern exposures might induce a still greater period between the openings of the two classes of flowers.

WITLOOF.—This popular French salad is a form of endive, and originated in Brussels in 1857. It derives its name, says M. Rodigas, from "wit," *white*, and "loof" foliage, and the name was formerly applied to the blanched endive itself. Endive is an improved form of the common chicory, now found growing wild around most of the older cities of the United States.

Poisonous Mushrooms.—A number of Italians were fatally poisoned recently by eating some noxious species. The newspapers have had much to say about the ignorance which mistook "toadstools" for mushrooms; but have displayed much more ignorance in the efforts at enlightenment than the unfortunate Italians who suffered from over-confidence rather than from excessive ignorance. Of the large number of species comprising the mushroom family, by far the larger number are wholesome and nutritious. Those that are severely poisonous are comparatively few. In Italy a poisonous species of mushroom is a rarity, and a large number are used as food. The Italian is fully justified by his experience, in laughing at American ignorance which suffers such a vast amount of delicious and nutritious material to go to waste. That a few Italians have been caught by mistaking a noxious for an edible one is nothing to merit the declamations on their profound ignorance which the overwise critics have uttered over their misfortune. In one of these diatribes the writer has given a sketch of a "toadstool" which his reader is to avoid, but has figured *Agaricus oreades*, which is really one of the most wholesome and delicious of the group.

Possibly in the utter ignorance of the bounteous blessings of Providence showered everywhere around in great variety in the mushroom family, it is wise not to touch any but the one particular mushroom which even the bitterest despiser of general intelligence has to know. To the one who loves to look into the real nature of common things, there is no more reason why he should not enjoy scores of species than that he not eat tomatoes or egg-plants because the *Atropa* is a near relative. When asked how to distinguish a poisonous species of mushroom from an innocuous one, little more can be said then that they are to be distinguished by the same rules by which we distinguish the fruit of a tomato or egg-plant from that of *Atropa belladonna*,—that is to say, by intelligent knowledge and observation. There is no royal road to such learning.

Turnip Culture.—Probably few vegetables are more satisfactorily grown by amateurs than the turnip, and yet it is one which they very seldom think to try. The reason probably is that so many persons try to grow vegetables by published hints in catalogues and serials, which are impossible to carry out, by reason of the different climates and circumstances under which vegetables are grown. This was particularly found to be a trouble in the early literary work of the senior editor of this magazine, who endeavored to get up hints for the month in the periodicals with which he was connected. In a small country like England, densely populated, and where the whole country is scarcely larger than the single State of Pennsylvania, instructions of this kind can be made generally useful; but in our country, which extends almost from the Tropics to the Arctics, it is impossible to give any details which shall be valuable over any extent of territory. The turnip is especially an illustration of this. In order to get them into thorough perfection they can only be made to reach this point when the temperature is comparatively low,—no one can raise good turnips when the temperature is over 55° or 60°, and as soon as it gets beyond this they are hot and stringy. Thus in Pennsylvania the turnip would have to be sown to get the best results about the middle of September; a hundred miles north it would have to be two weeks earlier, and so on; until in Canada one might sow turnips about midsummer and yet have fairly good results. In some parts of our southern country we can get very good turnips by raising them in midwinter; at any rate, if one can remember this one point about the temperature it requires, it is a hint for successful culture anywhere. It may be further remarked that to have good mild turnips, the soil cannot possibly be made too rich.

Good Massachusetts Vineyards. — The Massachusetts Horticultural Society found last year the vineyards of Samuel Hartwell, of Lincoln, Arthur J. Bigelow, of Marlboro, and C. B. Andrews, of Fitchburg, deserving of especial commendation and to which they awarded premiums. Mr. Bigelow finds that a soil in which stones are numerous, is excellent for successful grape culture. He has about 800 vines on one and one-half acres—kinds being chiefly Moore's Early and Concord. The vines were planted in 1870 and have been in bearing about twenty years. Plants were set 8 feet apart in 2 rows, trained to trellises—the trellises being 10 feet apart. They are pruned in November as soon as the foliage has fallen and before the wood has frozen. He leaves one cane and eight buds for next year's fruit, and also one or two buds in order to grow a cane for the next year. The bearing one is cut out and a new cane trained up for each season. He uses ground bone and other artificial fertilizers as top dressing at the rate of about one ton to the acre. He keeps the ground clear of vegetation with a horse and light cultivator—his object being to get the soil warm as early in the season as he can. He checks the fruiting canes by pinching out as soon as the growth has made five leaves,—and the fruiting cane for the next year he checks when it has reached eight or nine buds in length. The laterals on the canes for the next year's fruit he allows to grow to two leaves in length before checking them. About the first of July he goes through the vineyard and cuts off weak branches, such as he does not think worth leaving to ripen. He usually gets about eight pounds to a vine. Mr. Hartwell's vineyard composed about eight acres, chiefly of the Moore's Early. He uses about five hundred pounds of fertilizers to the acre, sowing it broadcast; keeps the surface clear of weeds by a horse harrow; but not working up the soil any deeper than is necessary to keep down the weeds. He does not think that white grapes are as profitable in market as the darker ones. Mr. George Anderson's vineyard, of about one acre, was devoted to the Delaware grape. They yield him about ten pounds of fruit to a vine. Fifteen pounds have been produced.

Girdling Branches to Promote Fruitfulness.—It has long been known that if a ring of bark be taken from a branch it will cause that branch to prematurely bear fruit. But that branch usually dies soon. The ring may not be taken completely around, that is to say, a connection between the bark above the ringed portion and below the ringed portion remains. In this case, the part above the girdled portion does not die, but is brought into fruitfulness, which continues for several years. This has only been employed as a matter of curiosity, as it is usually considered that the quality of the fruit is impaired by this procedure. Certainly in grapes, the fruit produced after girdling is not nearly as sweet or in any way as much appreciated, with the single exception of size, as in cases where the girdling process has not been attempted; but in the orange culture in Florida, it is stated that this girdling is becoming a part of general practice, and perhaps this may account for the enormously large increase of sour instead of sweet oranges, which is being poured into northern markets from that State.

Standard of Excellence in the Fig.—To the average observer one fig on a tree might seem as good as a fig on another tree, but there are standards of excellence in the average, as well as in any other fruit, and to which the improver aims. Some figs are comparatively tasteless, having little sugar, and they are somewhat dry without much juice. When therefore, the raiser of the new fig desires to commend it to proper approval, he would state that it is particularly sweet and juicy. Size, of course, comes in for consideration as well as other particulars and then again some will stand a little hardship better than others, in other words there are tender figs and hard figs. Again there are some in which juice is more freely secreted than in other kinds. So that on the whole there are just as critical standards of excellence in the fig as in other fruit.

Gathering Tender Fruits.—California is the home of expert practice in everything relative to fruit culture. Even in such a delicate operation as gathering fruit without bruising, admirable contrivances are in vogue. Everyone knows that delicate fruits must be gathered without bruising, that if they are bruised they will soon rot. In California the fruit is collected by having a circular form covered with light cloth made in halves, so that when put together it covers the space beneath the branches of the tree, and every time the tree is shaken the fruit will fall on the cloth without the slightest bruise. If the tree is shaken too strongly too many will fall at once—with little shaking few fall at a time, and the result is said to be entirely satisfactory. This is on the principle of some fire-escapes, where people jump into blankets and hammocks of some textile fabric, easily falling. There seems here to be a hint on which Eastern fruit growers might build to advantage.

BIOGRAPHY AND LITERATURE.

A DAY.

Talk not of sad November, when a day
Of warm, glad sunshine fills the sky of noon,
And a wind, borrowed from some morn of June,
Stirs the brown grasses and the leafless spray.

On the unfrosted pool the pillared pines
Lay their long shafts of shadow; the small rill,
Singing a pleasant song of summer still,
A line of silver down the hill-slope shines.

Hushed the bird-voices and the hum of bees,
In the thin grass the crickets pipe no more;
But still the squirrel hoards his winter store,
And drops his nut-shells from the shag-bark trees.

Softly the dark green hemlocks whisper; high
Above the spires of yellowing larches show
Where the woodpecker and home-loving crow
And jay and nut-hatch winter's threats defy.

O gracious beauty, ever new and old!
O sights and sounds of nature, doubly dear
When the low sunshine warns the closing year
Of snow-blown fields and waves of Arctic cold!

Close to my heart I fold each lovely thing
The sweet day yields; and, not disconsolate,
With the calm patience of the woods I wait
For leaf and blossom when God gives us spring.

—John Greenleaf Whittier.

Museum of the Academy of Natural Sciences of Philadelphia.—This famous institution is the oldest of its kind in America,—having been founded in 1812. The work which has been done generally for American Botany gives it an especial interest to our readers. Nuttall and other eminent botanists had their early headquarters here, and many of their collections are still among the valued treasures of the institution. The collection of plants to-day comprises about forty thousand species of flowering plants and ferns,—and when it is remembered that about one hundred thousand is all that are so far described as known, it will give some idea of its great value. It is illustrative of the soundness of the common saying that "Large trees from little acorns grow," that this great institution commenced with a few stuffed toads and one monkey. In some departments its collections now are considered superior to any other in the world. Besides the lesson of its growth from so small a beginning, it is also instructive to know that up to a few years ago the whole of this great work was done by the voluntary work and cost of its members,—and that the care of this vast institution was undertaken and carried out by the unpaid labors of lovers of science, who gave time taken from business or professional pursuits. These facts show admirably what may be done when a true love of the subject actuates human effort. It is generally considered that what this institution has done could never have been accomplished by merely paying people to do the work. Recently the State of Pennsylvania has required some place in which to display its collections, especially those made by its geological survey and other bodies. For this purpose it has appropriated to the Academy one hundred thousand dollars by which to add to its museum. This is the unfinished building which appears in the background of the picture.

Indian Customs.—Indians and barbarians do not usually make use of flowers or evergreens as decorations, but the Zuni and Moqui Pueblo Indians are exceptions, and these perhaps, because as Indians they were among the most cultivated of the Indian tribes. They have dances in which the Indian corn takes the place of honor, one of which Mr. J. Walter Tewkes has recently described as the Ham-po-ney; and is thus narrated:—

"The most elaborate of all the dances by the women which were seen in my sojourn during the summer in Zuni was a corn dance called the O-to-na-wey or Ham-po-ney. This dance is in most respects not unlike the Klar-hey-wey, but it is more elaborate and is participated in by all the Zunians. It is celebrated very rarely and on that account a description of it has considerable value. When we reflect what changes come over the manners and customs of the Pueblos in a few years we can readily see that those ceremonies which occur after long intervals of time are particularly desirable to describe. We do not know but that in another decade such a dance as the Ham-po-ney, celebrated as it rarely is, will be so modified that much of its primitive characters will be lost. It is, therefore, a profitable contribution to our knowledge of the ethnology of the Zunians to record the present characteristics of the ceremony before the changes take place.

On the night before the Ham-po-ney, the Koy-e-a-ma-shi built in the sacred dance place a bower of cedar in which the dance of the morrow was to be celebrated. These priests cut the cedar from the hills at the south of the town and late in the afternoon came back to the place loaded down with great bundles of these boughs. With much raillery they decorated the beams of the bower which had already been built with cedar boughs, tying them on with grease-wood fibres. During this duty they were clad in the manner characteristic of this priesthood as already described.

On the morning of the dance, the bower was seen to be tastefully decorated, and its whole interior occupied by seats for the dancers. There was an elaborate shrine in the middle of the building.

Two rows of blanketed seats extended down the middle of the house facing the east. There were places for the women who later take part in the ceremonies. Between these seats there was made with sacred meal on the ground, a terraced figure with apex pointing towards the east. On the eastern side of the house which was open, there was a line of four seats for as many women, the Show-ko-mosse, who take a prominent part in the dance. In front of them a line of baskets, heaped up with corn, was placed and a bank of feather plumes. A feather plume was placed in the ground near each seat.

The musicians sat on each side of the dancers. There were two sets of drummers and one squad who accompanied the dancers with the music of the horns.

The character of the dance was in general the same as that of the Klar-hey-wey. The dress, however, was much more elaborate and the paraphernalia more striking.

Eight women and one man danced in a row with a graceful movement of the body slowly edging their way from the bower into the open plaza. They bore painted tablets on their heads and in their hands carried ears of corn and sticks upon which were tied feathers. Their arms were extended and swayed up and down as they went through the dance. The male dancer stood midway in the line and, when the women ceased, kept on dancing, raising one foot rapidly after the other. Brass bells rattled on his knees.

The ears of corn which each dancer held were drawn to the mouths of the dancers by several old women who performed that ceremony, passing from one to another of the participants as described in the Klar-hey-wey. In the second part of the dance, in which the musicians furnished the instrumental music, the dancers carried hand tablets similar to those which they bore on their head.

The dancing was continued all day with the exception of a short time given to a feast when the dancers ate in the presence of the audience, among whom the food was distributed after the dancers had eaten.

The dance lasted all night, during which a fire was kindled in front of the bower, and notwithstanding a heavy rain somewhat dampened the ground of the plaza, the dancing went on at intervals until day-break.

In the morning a procession, composed of four boys and girls with Ni-u-che the representative of A-hai-u-ta, the war chief, and another, visited the shrine of Her-pah-ti-nah, marching three times around this sacred place. The slab which closes it on the east side was turned down, the chamber was opened and in it were deposited with prayers, offerings of feathers, water and meal."

Overwork.—A few possibly die early from overwork, but many more pass away from want of enough. Active brainy men who have not abused their bodily system by excesses are among the longest livers. Gladstone, the English Premier, who is passionately fond of gardening and forestry as a relaxation, and who has been a wonderful worker, is now in his eighty-third year. Also in his eighty-third, is Professor Babington, the Professor of Botany in Cambridge, England, author of one of the best works on the British flora, and a tremendous worker. Another heavy worker is the great American geologist, Prof. Hall, of Albany, New York, yet though over eighty, was working as actively as a young man at a recent science meeting at Rochester.

GENERAL NOTES.

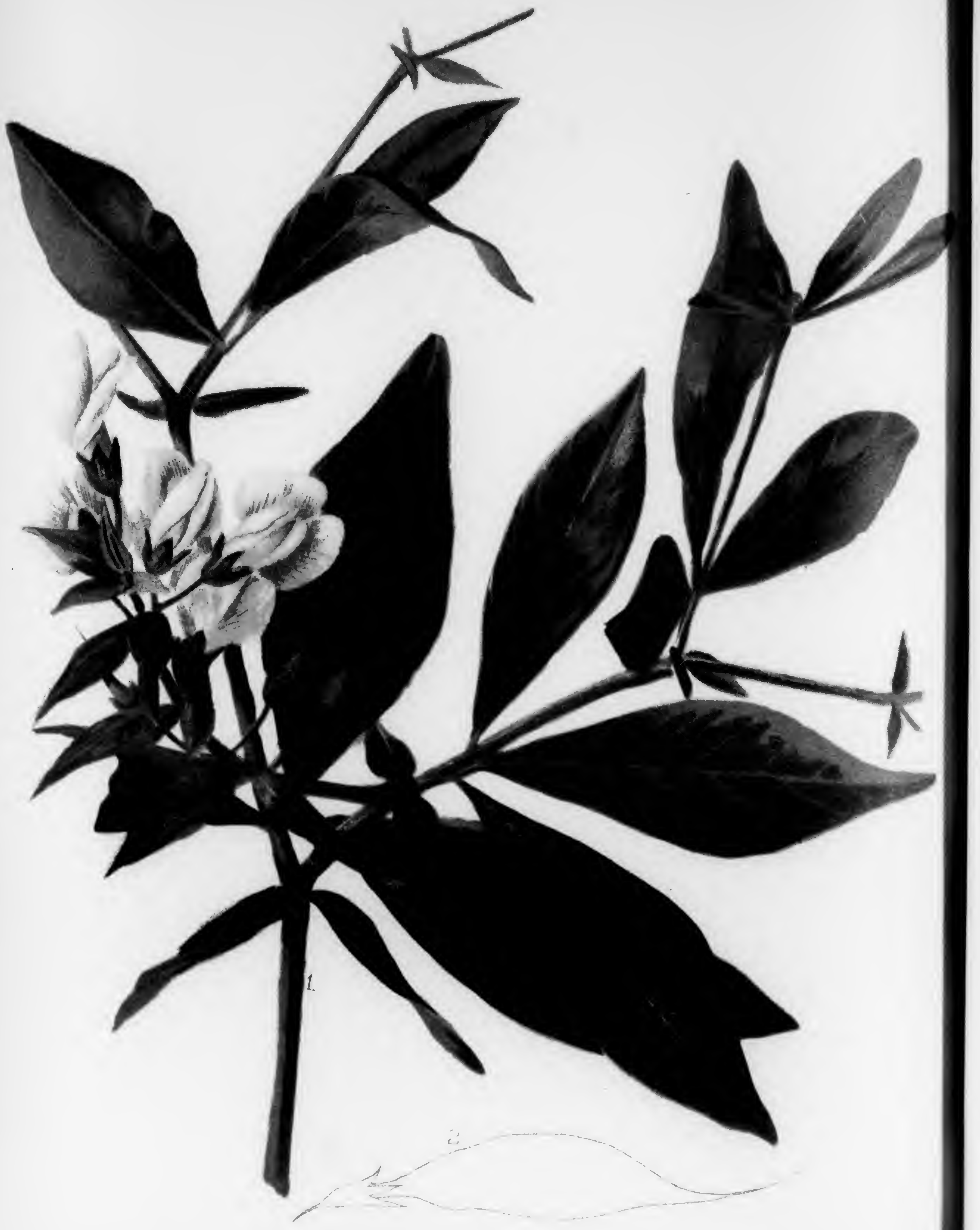
CNICUS EDULIS. — Professor Edward L. Greene, in "Erythea," corrects an error into which MEEHANS' MONTHLY fell in referring to the edible thistle as being found in Colorado, when in fact it is confined to the Pacific coast. Also in guessing from the very imperfect description of a correspondent some time since, that "Canaigre" might be the dwarf golden chestnut. This was corrected as soon as specimens were received, when it was seen to be a dock. Prof. Greene's kindness in making these corrections is much appreciated, as it is the desire of the conductors that every statement in the magazine should be absolutely accurate, if possible. It is, however, difficult to reach the same perfection in a magazine that is expected in a deliberately prepared work. In the same magazine in which the above kindly corrections occur, *Rhus glabra*, appears as *Phus glabra*. The Professor also regards MEEHANS' MONTHLY as "impatient of the action of those who would have a correct and lawful plant nomenclature." For instance, he would have *Cnicus*, as above referred to, called *Carduus*. No objection has ever been made by the conductors to having errors in nomenclature pointed out; their position is that dictionaries or lexicons must of necessity be followed in all magazine offices; and that the proposed corrections, however justifiable they may be, cannot be used to any practical advantage, until the dictionaries adopt them.

THE FORTHCOMING VOLUME OF MEEHANS' MONTHLY.—The end of this year is approaching, and with it commences the fourth volume of MEEHANS' MONTHLY. It is a source of pride to the publishers that they are able to make a work successful that no regular publisher would touch. Its success proves it to be a slander on the American people, that only that which caters to a comparatively low taste will take. The average number of educated Americans who have learned to distinguish between mediocrity and an advanced position in general culture, is much larger than is generally supposed. The conductors of MEEHANS' MONTHLY have had faith in them, and received their confidence in return. No spoons or watches have been offered that the subscriber might get something for what he does not really want or care. A constituency has been gathered together who are fully satisfied that they get the full value in the subscription price. One may take a pride in such a constituency, and we are proud. Few intelligent persons see a copy of our magazine without desiring to be a subscriber. There are yet thousands who have not seen or heard of it, whom we want to gather in. We know from experience that many would be thankful to friends who would draw their attention to it, and specimen numbers will be gladly mailed free to any address given to us. Lists of names sent with renewals of subscriptions will be a favor to one's friends as well as to the publishers.

THE CORRESPONDENTS OF MEEHANS' MONTHLY.—Among the many pleasant experiences in conducting this magazine the conductors have to note the courteous manner in which correspondents express their differences. The temptation to keen retort and savage expressions is freely indulged in by writers in even strictly scientific papers. It is gratifying to find contributors to this magazine admitting the possibility of being wrong sometimes.

BAPTISIA LEUCOPHÆA.—In the selection of subjects for the colored plates the aim is to teach geographical botany as well as to give lessons in as many natural orders as possible. It is a long time since one of the butterfly or leguminose class was presented, but the next will be one of these—*Baptisia leucophæa*. It will represent what was once the "prairie region" of the United States.

PROF. C. S. SARGENT.—Mr. Nicholson, curator of the Royal Gardens, Kew, gives praise to the Horticultural labors of Professor Sargent.



BAPTISIA LEUCOPHÆA.

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CREAM-COLORED BAPTISIA.

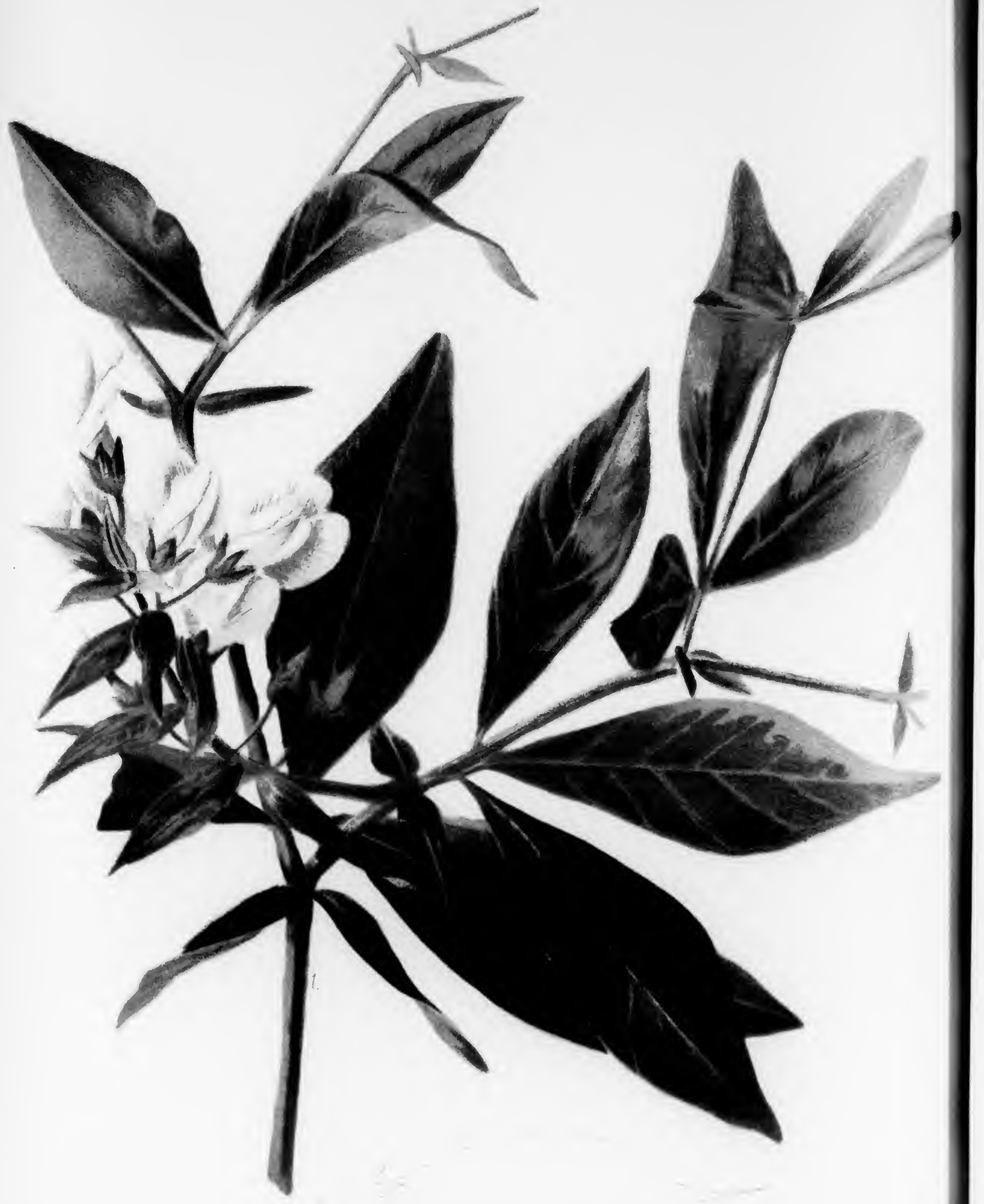
NATURAL ORDER, LEGUMINOSÆ.

BAPTISIA LEUCOPHÆA, Nuttall.—Stem two to three feet high; villous, smoothish when old; petioles, very short; leaflets oblanceolate, varying to obovate, two to three inches long by half to one inch wide; stipules more than half as large as the leaves, triangular-ovate, persistent, the bracts also large; raceme twenty to fifty-flowered, nodding or inclined horizontally, the flowers turned to the upper side on their long pedicels, pedicels one to two inches long; legume ovoid or roundish, inflated. (Wood's *Class-Book of Botany*. See also Gray's *Manual of the Botany of the Northern United States*, and Chapman's *Flora of the Southern United States*.

Baptisia is a distinctively American genus, containing over a dozen species, and is also, perhaps, one of the most interesting genera among the flora of the United States. There is a similarity of habit and general appearance running through all the species; but in the inflorescence there is great variation, especially in the color and size of the flowers, among which are white, yellow and purple, with many various shades between them. They are confined wholly to the Atlantic States, ranging from Maine to Minnesota, and thence southwardly to Florida and Texas. No species has been found beyond the Rocky Mountains; the allied genus *Thermopsis* seeming to take its place as it travels west.

In a certain sense it is a new genus. No mention of it will be found made by any author of the last century. Two or three of the species were known to the earlier explorers in Virginia, but they were supposed to belong to the genus *Sophora*, or *Podalyria*, a genus which seems to have its principal home in the Cape of Good Hope. In searching for the family history of these plants these old genera will have to be consulted by the critical student. Even Ventenat, the French botanist, who established the genus *Baptisia* in 1808, but a few years before, in the history of the new plants growing in the garden of Cels, where so many of the collections of Michaux and other celebrated botanists were raised,—had described our present *Baptisia australis* as *Podalyria australis*. Nature must have suggested some differences between the two genera before the botanist knew how to describe them, for the general appearance of the plants is by no means suggestive of the Podalyrias from southern Africa. But the descriptions of the two genera, briefly given in those days, merely make the calyx cleft to near the base, while, as we see in our illustration, *Baptisia* is but cleft half way down; and the stamens fall away at once as the petals fade in *Baptisia*, while in *Podalyria* they are united at the base, and thus remain around the ovary for a long time. In other words, the stamens are persistent in *Podalyria*, and early deciduous in *Baptisia*. Ventenat had the name suggested to him from the use made of *Podalyria tinctoria* in dyeing. *Baptos* being a Greek word signifying a dye, and hence *Baptisia* became the name for the whole genus.

The flowers of *Baptisia* have attracted some attention from those now engaged in the study of the manner in which flowers are fertilized. Bees in collecting honey or pollen, as they go from flower to flower, take the pollen of one to the other, and in this way they may be cross-fertilized. It is interesting to watch the bees as they do their work. Their feet rest on the two wings, and, pressing these down by their weight, the keel is brought up against the pollen-covered breast of the insect, and the stigmatic surface of the pistil thus gets foreign pollen before it gets its own. In order, however, to test whether they could be fertilized by their own pollen, the writer has enclosed the flowers in gauze bags, so as to exclude bees, in which case but very few flowers perfected seed, while those uncovered on the same plant produced seed in abundance. However, producing seed is not always a matter of pollenization. Large quantities of plants may often be seen in proximity to each other, some seasons nearly all bearing seeds freely; at other times a few plants will be very productive, while the most of them are wholly barren.



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INTENTIONAL SECOND EXPOSURE

Some of the species have the remarkable peculiarity of always turning black in drying, no matter how careful the plant collector may be in the endeavor to make good specimens of them.

The genus, as already noted, is found in some of its species all over the Atlantic part of the United States. The number increases as we approach the higher lands from the coast, and decreases as we reach the Mississippi. But we do not meet with our species until we are across the Alleghany range, and it is not fully at home until we get into the level lands. It is substantially a prairie species,—and if the common name of Cream-Colored Baptisia had not already been given to it, it might fairly be named the Prairie Baptisia. It is one of the few species that have managed to get a little distance beyond the Mississippi, as it is found along its line in Texas, Arkansas, Kansas and Nebraska. It is among the earliest of the beautiful prairie flowers,—the Marcy expedition finding it in full flower in April, while even so far north as Minnesota. Parry reports it among the May flowers. It is found alike in open grassy plains, as well as in the higher woodlands of these regions. In its habits it is just such a flower as we might imagine Longfellow to have had in mind as he wrote:

"When the warm sun, that brings
  Seed, time and harvest, has returned again,
'T is sweet to visit the still wood where springs
  The first flower of the plain."

The flowers, however, do not make as much show in the natural scenery, as do those of some other species, through the habit they have of reclining instead of rising erect, and in this way they are often covered more or less by the foliage. The flowers are larger than in any of the other North American species. It was first observed by Mr. Nuttall, growing abundantly near St. Louis, and by him named *Baptisia leucophœa*, in his "Genera of North America," issued in 1818. It varies somewhat in different locations, and the flowers as represented in the *Botanical Magazine*, seem more erect and conspicuous. The variation in some specimens collected by Hall in Texas, were so marked as to lead Dr. Gray to give it the sub-name or "variety" *lævicaulis*.

Our plate has been so arranged as to give a fair representation of the plant, though from its size it was difficult to give all the peculiar characteristics of the species. The spike of flowers chosen, had of necessity to be a small one; but it shows well the large leafy and strongly nerved bracts, which are very conspicuous in this species, and which indeed led Muhlenberg and others of the earlier botanists to call it *Baptisia bracteata*. The flowers are a little undersized as compared with vigorous specimens, but the yellowish white flowers are just as we find them in larger ones. The calyx lobes, extending down to about half the depth of the calyx, as noted by the early botanists is well shown; as is also the divaricate or forking character of the branches. The leaves are, of course, occasionally larger, but an interesting point in our specimens is that instead of the leaves being almost sessile, as in most descriptions, these have petioles nearly half an inch long.

The seed vessel in the illustration is immature,—but it may be noted that, when ripe, some species have the seeds loose in the vessels, and the seeds rattle like a child's toy in the shaken seed vessel. Indeed, one of the popular names is "Rattle box." Nature loves variety, so sometimes seeds cling to an opening capsule, —and sometimes it fails to scatter loose ones.

This genus is a good illustration of the superiority of the modern or natural system of botany over the old artificial systems, even the comparatively good one of Linnæus. Examining most of the pea-shaped flowers they were found to have the stamens divided into two sets. In one there was but a single stamen, and in the other all were united together at the base. This character formed Linnæus' class *Diadelphia*. But, as already noted, in Baptisia, the stamens are all free from each other, and this fact compelled botanists to place it in the class *Decandria*, far away from its natural associates of the Papilionaceous order.

Still, under the natural system, plants, at times, find queer associates. The aim is to bring together that which is alike, and separate the unlike from the like. But even the best efforts of this character fail occasionally. All that can be said of the systems known as "natural" is that they are less unnatural than those which went before.

Explanation of the Plate.—1. Small specimen from a Western State, contributed by Josiah Hoopes. 2. Nearly mature seed vessel.

WILD FLOWERS AND NATURE.

NATURE'S ROSARY.

The beaded dew-drops hang on blades of grass,
On spiders' webs, and twigs of bush and tree,
Thick-strung as pearls—the rosaries of Nature,
Which, by the morning sun's warm fingers touched,
Will rise invisible as prayers to heaven.

—Thomas Conrad Porter.

Variations in Plants.—It does not seem to be generally recognized that no two trees or plants come exactly alike, any more than two individuals among the human family might be expected to be exactly alike. Indefinite and absolute variation seems to be a law of nature, and yet much surprise is felt at variations in trees, and these variations are frequently taken and Latin names given them to an extent that is absolutely alarming and confusing to the systematic botanist. On the conductor's table is the "Gartenflora" of March the 15th, an admirable German botanical and horticultural publication, in which are named and described no less than twenty-three varieties of our common silver maple, drawings being given of a large number of them. Those who are familiar with this common tree in our country, well know that it would be just as easy to get a hundred varieties as ten. There is, however, one difficulty which will excuse sometimes the use of a Latin name to mark a conspicuous variation. The common cut-leaved silver maple, for instance, brought into great prominence by Ellwanger & Barry, from a plant found by Mr. Wier, of Illinois, is Latinized as Wieri. It is difficult for nurserymen to decide how to name these variations, and some name is certainly required under which to introduce them. We might, to be sure, say Brown's Maple, Smith's Maple, Jones' Maple, and so on, but it is evident that such names would never become so permanent and fixed as when the Latin form *Smithii*, *Brownii* and *Jonesii* would be employed, and yet the use of these Latin names in this way proves to be very annoying and troublesome to the systematic botanist.

The Buttonwood in Ohio.—Mr. Uselma C. Smith, Philadelphia, kindly contributes the following:

"There was such a large tree some years ago, well known to me, growing on my brother's farm in Jefferson, Ashtabula Co., Ohio, about ten miles south of Lake Erie, on creek bottom land, sheltered by hills. My brother and I measured this tree. I give you the result of our measurement: Seven feet from the ground it was 42 feet six inches in circumference, and about 14 feet in diameter; increasing in size rapidly towards the roots where we stood to make our seven feet high measurement. Four feet from the ground it would have measured from 48 to 50 feet. About 20 feet up, the trunk was divided into four large branches, which spread in opposite directions, from five to eight feet in diameter, round and clean. They covered over 150 feet in circumference. No vegetation grew under its shade, but grass. It was the place of resort in the fall for the country people, for their harvest parties, where platforms were constructed, and they danced by moonlight to their rustic music. When measured, the tree was apparently sound. Some years afterwards it was cut into by hunters to dislodge game, finding it to be hollow. It was burned out by some vandal boys. This weakened it, and it was blown over by a heavy storm. Contrary to the usual custom, this tree spread out and was shaped much like an apple tree. Growing on rich land, and well watered, it bore a large and heavy foliage. Doubtless this accounted for the absence of other trees and shrubs growing beneath it. It was the pride and admiration of the people of the surrounding country."

Galls on the Wych Hazel.—In many localities, the Wych Hazel is covered by many small excrescences which seem to take the place of fruit, on the fading of the flowers. These are galls formed by species of aphis, as can readily be seen by cutting some of them apart.

The Russian Thistle.—Plant growers very often complain when the botanist, under the recognized rule of priority, feels compelled to change one botanical name for another. But this great evil is seldom considered when a common name is in question. Any one has a right to give a plant any common name he chooses, and, as a consequence, scores of names are given to the same thing, and few know what another is talking about. This thought occurs particularly on reading a government publication, issued by the Department of Agriculture, in relation to the "Russian thistle." We could not imagine what the Russian thistle could possibly be. On reading, however, it is evident that what the United States government calls in this pamphlet the Russian thistle, is the plant which has been long known to residents along the seacoasts as Saltwort, and which is botanically *Salsola kali*. It appears, according to this document, that it is called Russian cactus, as well as Russian thistle, and that it is also called tartar weed, and hector weed. Possibly, if it were worth the while of the United States government to hunt them up, a score of other names might be discovered. It appears to be an extremely troublesome weed in Dakota. Botanically the plant is related to the spinach family.

Hygienic Value of Perfumes.—Dr. Anders, of Philadelphia, a few years ago made the interesting discovery that the ozone in the atmosphere, the element which is the great purifier, was mainly supplied from blooming flowers,—and for this reason blooming plants were healthful in dwelling houses as well as attractive. Some interesting experiments with the odors of flowers have been made in the old world, and it is found that many species of microbes are easily destroyed by various odors. The odor of cloves has been known to destroy these minute creatures in 25 minutes; cinnamon will kill some species in 12 minutes; thyme, in 35. In 45 minutes the common wild verbena is found effective, while the odor of some geranium flowers has destroyed various forms of microbes in 50 minutes. The essence of cinnamon is said to destroy the typhoid fever microbe in 12 minutes, and is recorded as the most effective of all odors as an antiseptic. It is now believed that flowers which are found in Egyptian mummies, were placed there more for their antiseptic properties, than as mere ornaments or elements in sentimental work.

Bear Grass.—Mr. C. F. Saunders, Philadelphia, notes as follows: "The note on *Bear Grass* in the October number calls to mind that this summer I heard the same name used by a North Carolina mountaineer to designate *Amianthium muscætoxicum*. The name seemed rather appropriate, I thought, to the bunches of coarse, grass-like leaves, growing, as I often saw them, about rocky, cavernous places, which looked for all the world like the haunts of bears. Another common name that I heard the same man use and which I do not find noted in Gray is Coltsfoot, applied to *Galax aphylla*. The outline of the leaf bears a good resemblance to the print of a horse's hoof when unshod, as a colt's hoof would naturally be, and in size is not dissimilar to the latter."

Second Growth of Pine.—Some people insist that when an oak forest is cut down pines spring up,—and that oak follows pine, and so forth,—but this never occurs except where the two kinds are not far from each other. In localities where but one kind exists, that kind succeeds itself. An intelligent Nevada correspondent notes that where the pine timber was cut away twenty years or so ago, fine young trees, apparently about fifteen years old, now cover the same area. They grow so slowly when young, she says, that few observe them, but after a few years they grow rapidly. It is about the sixth or seventh year before they start on the rapid growth.

Fruiting of the Lily of the Valley.—Dr. James Darrach, of Philadelphia, author of a flora of Philadelphia, sends a spike of the common Lily of the Valley, in which the two lower flowers have produced fruit,—scarlet berries larger than those of the holly. It is worth investigation by those of inquiring tendencies, why the Lily of the Valley should produce millions of flowers without a fruit resulting. The variegated leaved variety usually produces a few berries in Meehans' Nurseries,—but the normal form does not.

A Scene on the Wissahickon.—In a former issue an illustration has been given of the face of the rocky scenery of the Wissahickon. In this issue another shows the passage of a little stream over the rocky surface. This peculiar part of the Wissahickon is known as the "Happy Valley." The picture was taken in the winter season. During the summer it is a favorite home for numerous species of ferns, among which the *Aspidium acrostichoides* forms a conspicuous part. This fern is known in the vicinity of Philadelphia, as the "Christmas Fern." The fronds are evergreen, and are collected in large quantities to aid in Christmas festivities, and are also employed in winter decorations of many kinds.

Plant Emigration, White Snake Root.—Ernest Walker, New Albany, Ind., says that this plant, *Eupatorium ageratoides*, under cultivation, is not only a beautiful, but extremely useful, fall flower for cutting. The flowers are pure white. In the rich soil of the garden the plants grow six to nine feet high. A row of them in bloom looks like a miniature snow storm.

Several years ago, Mr. Walker got plants from Kentucky, and planted them in the garden. At that time he had never seen a single plant of the species around New Albany, Ind., although it had been found. Now within the vicinity of the nursery, and in their grounds, it is becoming spontaneous. The volunteers appear singly here and there, growing about three feet high. They do not promise to become numerous enough to prove troublesome.

Luminous Fungi.—There are probably few who have not, at some time or another, met with cases of luminous fungi. The writer of this paragraph well remembers an old oak tree, hollow with age, and exposing a large proportion of decayed wood, which glowed at night almost as brilliantly as if a light had been placed inside the hollow shell. In some parts of the world, species with this characteristic are much more common than in others. In the islands of the Indian Ocean a genus, known as *Pleurotus*, furnishes a species, according to a French mycologist, which is so abundant, and in which the phosphorescence is so enduring, that the native women use it for personal adornment in the hair and dress. It is said that the glow will continue, occasionally, for twenty-four hours.

Geographical Range of the Kalmia.—Referring to the note of Mr. H. P. Kelsey in a recent number of the magazine, Mrs. E. L. H. Willis remarks that she has seen the Kalmia growing luxuriantly near Aiken in S. C., and believes it is plentiful in the woods in the vicinity of Charleston.

A WINTER SCENE ON THE WISSAHICKON.

Irritability in Plants.—Mr. Ernest Walker, of New Albany, Ind., has recently contributed some interesting notes on the manner in which the common wild sour grass—as it is called, *Oxalis stricta*—expels its seeds. They are thrown to a great distance by the sudden disruption of the capsule. He finds *Oxalis violacea* has the same power. The common Balsam of our garden, or, as it is sometimes called in American floriculture, "Lady Slipper," does the same,—especially when the seed pods are grasped. This and the *Oxalis* belong to the same natural order of plants. The garden Balsam derived its Latin name, *Impatiens*, from this characteristic. Possibly most species of *Oxalis* are irritable.

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PLANT EMIGRATION, WHITE SNAKE ROOT.—Ernest Walker, New Albany, Ind., says that this plant, *Eupatorium ageratoides*, under cultivation, is not only a beautiful, but extremely useful, fall flower for cutting. The flowers are pure white. In the rich soil of the garden the plants grow six to nine feet high. A row of them in bloom looks like a miniature snow storm.

Several years ago, Mr. Walker got plants from Kentucky, and planted them in the garden. At that time he had never seen a single plant of the species around New Albany, Ind., although it had been found. Now within the vicinity of the nursery, and in their grounds, it is becoming spontaneous. The volunteers appear singly here and there, growing about three feet high. They do not promise to become numerous enough to prove troublesome.

LUMINOUS FUNGI.—There are probably few who have not, at some time or another, met with cases of luminous fungi. The writer of this paragraph well remembers an old oak tree, hollow with age, and exposing a large proportion of decayed wood, which glowed at night almost as brilliantly as if a light had been placed inside the hollow shell. In some parts of the world, species with this characteristic are much more common than in others. In the islands of the Indian Ocean a genus, known as *Pleurotus*, furnishes a species, according to a French mycologist, which is so abundant, and in which the phosphorescence is so enduring, that the native women use it for personal adornment in the hair and dress. It is said that the glow will continue, occasionally, for twenty-four hours.

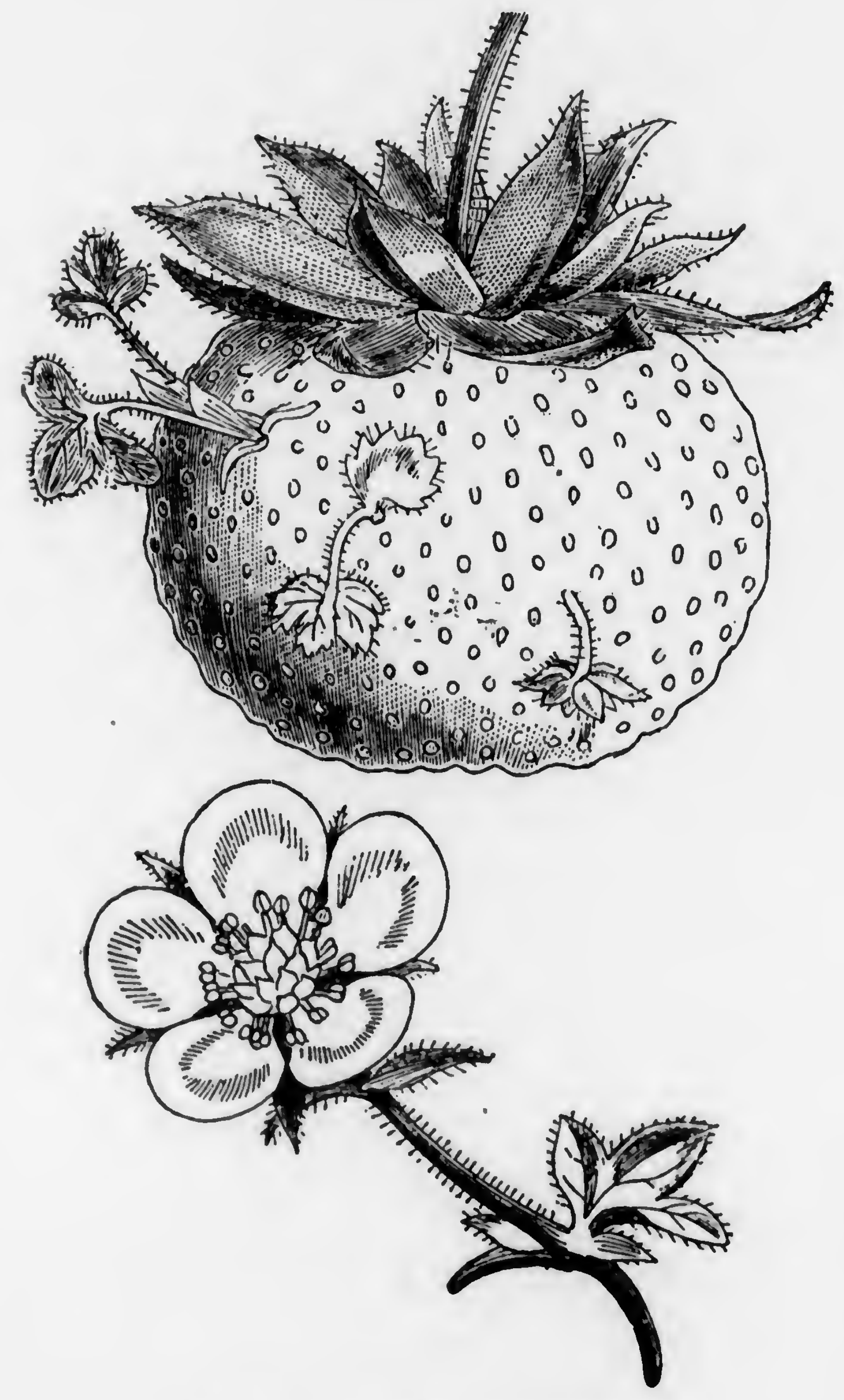
GEOGRAPHICAL RANGE OF THE KALMIA.—Referring to the note of Mr. H. P. Kelsey in a recent number of the magazine, Mrs. E. L. H. Willis remarks that she has seen the Kalmia growing luxuriantly near Aiken in S. C., and believes it is plentiful in the woods in the vicinity of Charleston.

A WINTER SCENE ON THE WISSAHICKON.

IRRITABILITY IN PLANTS.—Mr. Ernest Walker, of New Albany, Ind., has recently contributed some interesting notes on the manner in which the common wild sour grass—as it is called, *Oxalis stricta*—expels its seeds. They are thrown to a great distance by the sudden disruption of the capsule. He finds *Oxalis violacea* has the same power. The common Balsam of our garden, or, as it is sometimes called in American floriculture, "Lady Slipper," does the same,—especially when the seed pods are grasped. This and the *Oxalis* belong to the same natural order of plants. The garden Balsam derived its Latin name, *Impatiens*, from this characteristic. Possibly most species of *Oxalis* are irritable.

INTENTIONAL SECOND EXPOSURE

Proliferous Strawberries.—Few things are more instructive than the variations from normal forms occasionally seen in fruits and flowers. The departures from the original condition are supposed to illustrate the path by which changes in Nature travel. With this paragraph is given a sketch of a strawberry, taken from the *London Gardener's Chronicle*, in which little plants are growing out of the fruit. It has been long known from similar vagaries that there is practically little difference between the seed and the bud. This knowledge may easily be gained from our common species of garlic, in which instead of flowers in the head, small bulblets appear. A bulblet is nothing more than a bud,—in the strawberry the receptacle becomes fleshy, and the seeds are placed on the surface,—but in the case figured, the seeds have taken a short way to become plants at once, without going through the regular process of sprouting through the earth.



PROLIFEROUS STRAWBERRY.

Cactuses.—Our French contemporary, the *Lyon-Horticole*, notes, that as is the case in America, the love for the culture of cactuses, is somewhat on the increase, although the number of collections in the vicinity of Lyons is not large. One grower, however, has raised a large number of beautiful varieties, between *Mamillaria dolichocentra* and *Mamillaria rhodantha*, which are said to be remarkable. The raising of new forms of cactuses is somewhat of a new thought. There is no more reason why this occupation may not become as popular, and attractive, as the raising of hybrid orchids seems now to be in England.

In These Intelligent Days.—We have now before us a specimen of a grape vine, which has a protuberance which might readily be taken for a hickory nut or a fig. The party sending it to us is sure that the pollen of a hickory flower has been absorbed by the flower of the grape vine, and that this is therefore a case of immediate influence of hickory pollen on the grape,—yet, if the sender had only thought to cut this protuberance open, he would have found a little larva inside, which would conclusively show that the protuberance was simply the gall of an insect.

The Japan Ivy.—The *Ampelopsis Veitchii*, or as it is, properly, *A. tricuspidata* is believed not to be hardy in the Northwest.

Prof. Goff of the agricultural department of the University of Wisconsin, has succeeded in grafting it on the roots of *Ampelopsis quinquefolia*, our Virginia creeper, and hopes in this way to increase its hardiness.

Walking Fern.—Mr. Willard N. Clute, Binghamton, N. Y., notes that the Walking Fern, *Asplenium rhizophyllum*, known also as *Antigramma*, and *Camptosorus*, is abundant in Susquehanna county, Pa., growing on the tops and sides of the borders of some woods.

Robinia hispida.—This beautiful shrub, which has received considerable attention on account of the rarity of its seeding, is reported by Mr. Harlan P. Kelsey, as not unfrequently perfecting seed pods in the mountains of North Carolina.

GENERAL GARDENING.

A WINTER SCENE.

"The snow lay deep upon a hundred hills
And choked the hollows of the woodland-dells.
Under the ice the stream flowed noiselessly
And all the forest-trees were stark and bare.
The gaunt gray wolves, among their mountain-holds,
Grew fierce with famine, and the snowy owl,
Swept from his northern wastes by mighty storms,
Sought for his prey around the homes of men."

Howard Worcester Gilbert.

Vedalia cardinalis,—A Triumph of Scientific Method.—Some three or four years ago California orange culturists were almost in despair at the ravages in their orange groves of an insect known variously as the Fluted Scale, the White Scale or the Cottony Cushion Scale (*Icerya Purchasi*). For a time it looked as if orange culture would have to be abandoned in California, but just in the nick of time Professor Riley, Government Entomologist, came to the rescue. He had, after careful investigation, definitely ascertained that the scale in question was a native of Australia, and that it was not practically injurious there. Here was the clue, and it was skillfully followed up. Long correspondence with Australian entomologists, and the despatch of a carefully instructed agent to that country, resulted in the discovery of the parasite now so well known as *Vedalia cardinalis*, which keeps the Cottony Cushion Scale in subjection in its native home. When the scale was inadvertently brought over to California upon Australian oranges *Vedalia* had been left behind, with the result that its host, the scale, had multiplied without restraint, as commonly happens when an insect is imported without its natural checks. Forthwith a large shipment of living Vedalias was made from Australia to California, and the surprising result is known to everybody. Within a few months the scale was obliterated, orange culture was again on its feet, and *Vedalia* had become a household word in California.

The experiment was successfully repeated in the Hawaiian Islands, where also the scale threatened to extinguish orange raising, and last fall a special commissioner from the Cape of Good Hope arrived in the United States, with the purpose of securing a supply of Vedalias for use in his country, where the scale was menacing orange culture. He was given every assistance possible, both at Washington and in California, and went home with a good stock of the insects. One package was kept upon ice during the voyage (the method adopted in the original importation into California) and a second was left open that the insects might be fed *en route*.

The special commissioner alluded to, Mr. Thos. A. J. Louw, has recently reported to the Department of Agriculture, the entire success of this latest colonization of *Vedalia*, the insects having reached the Cape alive and well, and been distributed to various infested localities, and there is every reason to believe that they will make as rapid and effectual a clearance of the scale in South Africa as they have in California and Hawaii. In closing his letter to Assistant Secretary Willets, Mr. Louw says:

"While thanking you again for the kindness displayed towards me, may I request you also to convey to Prof. C. V. Riley my extreme obligations for the service rendered by him to me, and which I assure him will ever be appreciated by me."

Vedalia is rather a pleasing name, and it is not surprising that there should be as a substantial commemoration of this entomological romance, a Cathryn Vedalia Riley, the youngest of five girls, who form part of a happy family at the well-known entomologist's home at Sunbury in Washington.

History of the Calla Lily.—This was first introduced to Europe from southern Africa in 1687, and has become a great favorite with cultivators all over the world. It does not like a very warm temperature, nor a very cold one. It will live out in American waters, provided it is deep enough to be below the reach of absolute ice. It fills the ditches and narrow creeks in Cape of Good Hope, much the same as our spatterdock would here. It was removed, by Kunth, from the genus *Calla*, and called *Richardia Africana*, but it is not easy to get rid of a name which once gets into general use, hence it still goes by the name of *Calla*. The spotted one, common in cultivation during the last few years as the *Richardia albo-maculata*, was also introduced from southern Africa in 1859. This is well known by its spotted leaves. Another one was brought from the same country in 1857 under the name of *Richardia hastata*—the spathe being of a yellowish color, but very small, and is not yet much known. On account of the common Calla blooming most freely in the spring of the year, it has come into general use for Easter decorations; and not unfrequently receives, with a number of other plants, the common name of Easter Lily.

FRUIT MACHINERY.—When we consider the vast difference between the price of labor in American gardens and orchards, and the low prices paid in the old world, it is a matter of surprise to foreigners that we can compete so successfully with them in their markets. They attribute it to our fine climate and good soil, yet there are not wanting some intelligent fruit cultivators who believe that these conditions are just the reverse, that America has probably the worst climate in the world for the successful growth of fruits, and that it is simply American genius which overcomes these difficulties, and thus gives them the command of the world's markets. But it is in the far West, and especially along the Pacific slope, where thousands of acres are devoted to fruit culture, and the fruit industries are among the most profitable of the states' revenues, that this adaptation of art to overcome nature is more apparent perhaps than in the Eastern States. For instance, in the matter of the almond, our readers may not generally know that the almond is really the parent of the peach; the peach is simply an almond, which has learned to develop a succulent flesh over the stone; an almond is simply a peach with a dry shell over it instead of the fleshy coating which covers the peach. When ripe it splits open just as the bur of a chestnut would do, in order to allow the stone to escape. In the old world these almonds are shelled by hand, women and children are employed at almost nominal wages for the work, but in California where they have learned to raise almonds that they can sell even more cheaply than the old world people can sell theirs, they have invented a machine, by which the nuts are shelled. These almonds pass between rollers, which have a cog-like surface; the separate cogs held in place by springs so adjusted as to allow the passage of the nut under a sufficient pressure not sufficient to crack the shell; following, the nuts are then separated from the loose fragments of hulls by a fanning arrangement. The machine is worked by either horse or mule power. The only surprise is that such inventive genius is not developed in the old world. The general impression is that the superior habits of observation engendered by our system of public school education have a great deal to do with the cultivation of these inventive faculties. Sometimes we see praise given to the systems of education in effect in the old world as compared with that popular in America; but if the proof of the pudding is in the eating, American education seems to have decidedly the advantage. After all many of these workers in the fruit farms of the old world have no education at all.

PROTECTING LARGE TUB PLANTS IN WINTER.—Sometime since, it was noted in MEEHANS' MONTHLY that there was much waste labor in hauling and pulling up and down into cellars heavy tubs of soil with plants for winter protection. It was recommended to shake out the plants, and then put them again temporarily into boxes of earth,—replanting them again in their tubs in the spring. A Florida correspondent complained that it would never do to treat Sago palms that way. Miss Laura Bennett observes on this point.

"If *Cycas revoluta* (wrongly called Sago palm) is the plant referred to as Sago plant in July number, your Florida correspondent need not be concerned about boxing it. It is hardy as far north as Savannah, Ga. On Sapillo Island, near Darien, Ga., it was so long since introduced that it is now considered native."

USE OF BEAR GRASS.—The leaves of *Yucca filamentosa* (Bear grass), are used in the home garden of one of our Georgia correspondents, to tie up herbaceous plants,

CALIFORNIA AND AUSTRALIA CANNED FRUITS.—The "Farm and Home," a horticultural magazine of Melbourne, Australia, calls attention to the fact that Australia may become a close competitor with California in furnishing dried and canned fruits for exportation to the old world. Peaches, pears, plums and apricots, find themselves very much at home in Australia; and the freight from there to the old world is little, if any more than the freight from California. For some reason or other, the enterprise in prosecuting these branches of fruit business has never been very successful in Australia; but the "Farm and Home" states that during the past year or two, a great advance has been made in this branch of fruit economy, and that at least one firm in South Australia has been remarkably successful in making profitable ventures in this line to the old world. In some branches of agriculture the Australians have become close competitors with America for portions of the trade of the world; and it would look, from the facts above noted, as if they were destined in the future to come closely into competition with an industry which has been almost a monopoly for California.

STRAWBERRY CULTURE IN FLORIDA.--SEE P. 188.

LICORICE.—Annually for several years, the amount of Licorice imported into America has been continually on the increase. At the present time, the importation is simply enormous. As there are no doubt portions of the United States in which this plant would grow to perfection, it is remarkable that few, or possibly no attempts, have been made to cultivate it. Nearly all that we have now, comes from various parts of Greece. The roots run somewhat deep into the ground, and the dislike of our people is the hard digging. After digging the roots they have to be dried somewhat, and the juice is obtained by heavy pressure. Hundreds of thousands of pounds are produced in Greece alone, annually. The botanical name of Licorice is *Glycyrrhiza glabra*.

MICE IN HEDGES.—Young hedges of one or two years old, especially osage orange hedges, are liable to have the plants eaten off under the ground by mice or similar rodents, during severe winters. If the possibility of these attacks can be foreseen, they can readily be trapped and poisoned. Boxes of leaves mixed with Paris green material, sunk in the ground along the hedge line, is efficacious.

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INTENTIONAL SECOND EXPOSURE

Beautiful Cemeteries.—It has been remarked that Roman Catholic cemeteries, as a rule, are not treated to the same extent with landscape adornment as cemeteries belonging to other denominations. Bishop McQuaid, the Roman Catholic Bishop of Rochester, is, however, a famous horticulturist, and by his encouragement cemetery adornments of a horticultural character receive much favor. Aside from his beautiful garden at his country home at Hemlock Lake, about forty miles from Rochester, N. Y., he has a fine farm of over 200 acres, of which he has sixty acres in a vineyard, making, according to Mr. Falconer in the "American Florist," a great specialty of wine for sacramental purposes. The revenue from this wine manufacture, is donated in support of the Theological Seminary at Rochester. The varieties which he prefers for making this particular character of wine, are the Concord, Salem, Delaware, Brighton, Elvira, Hartford, Champion, Worden, Agawam, Ives and Ioná. The Niagara, Catawba, and Clinton are unsatisfactory.

Asparagus Culture.—Mrs. Seligman says that one of the most famous districts in Germany for growing Asparagus is Braunschweig. In that district there are over three thousand acres,—it is on the sand plain,—the sand being so light, that low frames, or fences, are placed between the raised beds, in order to keep the sand from blowing away. It is now known that the Asparagus plant is bi-sexual. It requires the pollen of a distinct plant to fertilize the seed, and consequently no one variety can be raised true from seed; but by selecting the largest and best of both sexes, planting them together, and again selecting and sowing very early, in the same way, very white and large heads have been obtained, until to-day, through this system of selecting, the Asparagus from that section is regarded as among the finest in the world.

A New Vegetable.—Mr. Julius Schnadelbach, of Grand Bay, Ala., writes to the *Florida Farmer*, that in New Orleans they now have a species of Yam, presumably a *Dioscorea*, which has bulblets from its leaves, weighing two pounds; and which are found to be a delicious vegetable. Quite a number of species of *Dioscorea* produce these bulblets. A common Chinese Yam introduced several years ago, produces them as large as beans, and another Chinese species, not introduced, has them as large as walnuts. There is also another species from South America, which has been named *Dioscorea bulbifera*, expressly on account of its producing these bulblets; but the writer has no recollection of anyone having such large bulblets as they are represented to be. It is worth looking into. Mr. Schnadelbach says that they are known in New Orleans as the Air Potato.

Florists' Flowers. — The most popular flowers with florists at the present time are roses and carnations ; but there are some few species which are grown by specialists, and which are coming into great demand. Various kinds of orchids, such as *Cypripedium*, are sometimes grown on an immense scale. The ordinary Cyclamen, a well known flower of the Primrose family, is also coming into extensive use. In this line, a house completely filled with the Persian Cyclamen when once seen is never forgotten. A number of florists in various parts of the country, are taking up the plant as one of the specialties in the cut flower business. Mr. Gustavus Bergmann, of Flatbush, Long Island, is one of the specialists in this line. He has one house eighty feet long by eighteen feet wide, wholly devoted to this culture.

Steam Heating.—Nothing surprises European horticulturists more on a visit to America, than to see the enormous advance which has been made in making steam heating of plant houses practicable. Even those who are at the head of the horticultural literature of Europe can scarcely appreciate what Americans are doing. In a recent number "Gardeners' Chronicle," gives an account of the advance this department has made in our country.

A Large Paulownia.—Mr. George Canby writes that he has since made an accurate measurement of the great Paulownia or Empress Tree in Independence Square, Philadelphia, and he finds at three feet from the ground, it is nine feet in circumference. As we happen to know that this is probably the oldest tree in the United States, it will be interesting to learn if there is a larger one or not in the country.

Preserving the Natural Colors of Flowers.—It is over a quarter of a century since the following appeared in the *Gardeners' Monthly*. Coming back again to America after its long travel, it is still worth republishing.

"The following ancient method which comes from America as new may be worth repeating and trying:—Take very fine sand, wash it perfectly clean, and when dry sift it through a fine sieve into a pan. When the sand is deep enough to hold the flowers in an upright position, take some more sifted sand and carefully cover them. A spoon is a good thing to take for this, as it fills in every chink and cranny without breaking or bending the leaves. When the pan is filled solidly leave the flowers to dry for several days. It is a good plan to warm the sand in the oven before using it, as the flowers will then dry more thoroughly. In taking the sand off great care must be taken not to break the leaves, as they are now dry and brittle. Pansies preserved in this way will keep their shape and brilliancy of color all winter, and many other flowers can be equally successfully treated—anything, in fact, where the full pressure of the sand comes on both sides of the leaf; otherwise they will shrivel. To fill in flowers with cup-like shapes it is better to lay them on the sand, and with small spoon fill in and around each flower. Ferns when preserved in this way have a more natural look than when pressed, and the Maiden-hair Fern looks almost as well as when it is freshly gathered."

Effects of Season on the Habits of Plants.—Mrs. Seliger of Hartford, Conn., notes among the peculiarities of the season, the flower in blossom of the Bird Foot Violet. Some violets flower easily in the fall, but the Bird Foot Violet seldom does. Some plants, however, changed their habits this season. The extraordinarily warm and dry summer, caused the branches of the Dahlia to mature, and when the fall rains came, instead of sending out flower buds, leaf buds followed. It is a remarkable peculiarity of the season, to see them with huge bunches of green leaves, and scarcely any blossoms. The practical flower grower, and for that matter the fruit grower also, may learn valuable lessons, from these peculiar seasons and derive great advantage from them as cultivators.

FRUITS AND VEGETABLES.

Mushrooms at the World's Fair.—A most interesting exhibit at the Exposition was made by the United States Government, in the Department of Agriculture, consisting of models of 1,000 different varieties of fungi.

As quite a stir was made in the papers not long ago, about the deaths in New York from eating poisonous mushrooms, this very instructive exhibit attracted the attention of quite a few persons, the most of whom were astonished to see so many varieties, marked as being edible. At a rough guess, there must have been at least one-half to two-thirds of edible kinds, ranging from big puff balls, as large as a baby's head, down to the very small kind, generally known as toadstools.

The writer was in conversation with a bystander who was very well versed on the subject, having made a study of it for several years. His mode of ascertaining whether a certain kind was injurious or not, was to eat a little himself, and if he felt no ill effects, to feed it to his dog. This plan may be a good one for the dog, but hardly so for the man, he having the last chance.

The Nectarine in California. — The "California Fruit Grower" kindly states, that "if Brother Meehan will come to California in August, he shall be feasted on the most delicious nectarines ever dreamed of without the suspicion of a curculio having been within nine miles of them." California is to be much envied that she has hitherto kept clear of the plum curculio. Somehow it seems as if the climate is not adapted to them. We can scarcely believe that while the coddling moth has found its way so easy, and found a home so inviting as California, that the curculio should not have had its chances as well. For all that, Californians are wise in doing all possible to guard against the introduction of the insect. No more nectarines when the curculio finds itself at home.

Rivals in Onion Growing.—Colorado vows to beat all Connecticut in growing onions. It is said that the soil and climate of Colorado are so well suited to the onion that more money can be made from a crop of onions than from any other vegetable crop.

THE AMERICAN POMOLOGICAL SOCIETY.—The executive committee of the American Pomological Society had arranged to have its regular bi-ennial session at Chicago. During its continuance at the World's Fair it profited, however, by the experience of the other congresses which found the attraction of the Fair so superior to their own meetings, that the papers were simply read by title, and the members then dispersed to see the sights of the Fair. The Pomological Society, therefore, simply agreed upon the time and place for its next regular bi-ennial session. The Society has long been honored for its practical good sense, in which it has proved a valuable aid to American fruit growers, and the action of the executive committee in this matter is all in a line with this good reputation.

RASPBERRY CULTURE.—The following brief note from Miss Laura Bennett might furnish texts for many good discourses on raspberry culture. For instance, the raspberry is essentially a shade-loving plant,—and the protection from the sun by the covering referred to is doubtless of as much value to the plants as the protection from birds.

"Tobacco growers, who after removing the cheese-cloth cover from their tobacco beds to their raspberry beds, have been pleased with the results. It is put high enough to be walked under arbor-like, extending to the ground on either side, prevents birds from destroying fruit and causes earlier ripening. A variety of blackberry bearing white fruit has for years grown (native) one mile east of Camilla, Ga. Sandy soil gives sweetest blackberries."

STRAWBERRY CULTURE IN FLORIDA.—The United States Department of Agriculture has issued a complete treatise on strawberry culture in Florida. Florida strawberries will now be in order, and the Northern reader particularly interested in a view of the manner in which the Florida fruit is grown for his use. See illustration, page 185.

THE PHYLLOXERA ON THE GRAPE VINE.—History is full of facts showing how near people will come to a great fact without actually reaching it. It was left to our Prof. Riley, not so many years ago, to discover that the cause of the failure of the grape vine in so many parts of the world was due to a little insect on the roots called Phylloxera. Yet in an article, which appeared in the proceedings of a French scientific periodical for August the 3d, 1868, is a paper by M. Bazille, announcing his discovery of great injury to the grape vine roots by an unknown species of aphis, which he named Rhizobius. It is well understood now that this insect was the famous Phylloxera of Riley.

THE NEWTOWN PIPPIN APPLE.—Commenting on the very instructive essay of President Janney, of the Columbus Horticultural Society, the remark was made that the large Newtown Pippin apple was remarkable for Ohio. Mr. Janney states:

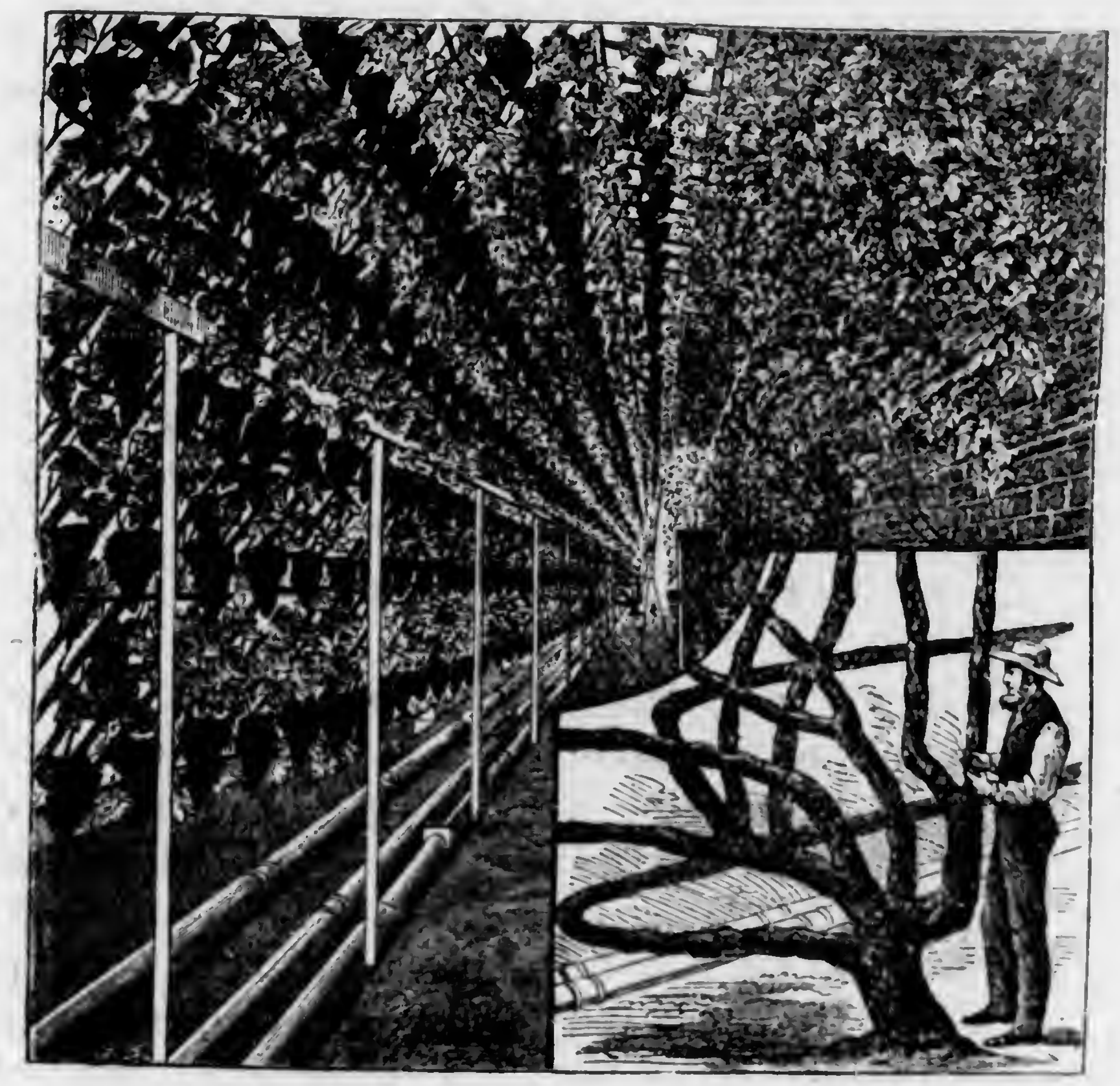
"You do Ohio more than justice in your reference to the prolific Newtown pippin tree. It grew on a farm two miles north of Lincoln, Loudoun Co., Va."

This makes the matter clearer, for it is found that this variety thrives nearly or quite as well in Virginia as along the Hudson river, where it first gained its fame. It does badly generally.

EARLY RADISH.—The radish is one of those vegetables that grow freely when the thermometer is but a very little above the freezing point, and it is therefore one of the easiest of vegetables for an amateur to bring forward early. Any little glass frame placed over the natural earth, in which the radish seed is sown, will bring them forward very rapidly. In case they freeze a little, they will not be materially injured. The soil for radishes should be very rich—indeed it cannot be too rich, if a mild and tender root is desirable. The poorer the ground the more likely the roots are to be biting and bitter. As a rule, the turnip-rooted radishes are fit to use before the longer ones, and they are the best where great earliness is desired.

A LARGE ORANGE TREE.—It is said that Mr. Fulton G. Berry, of Centreville, Fresno County, Cal., has a tree which the past season bore 4,000 oranges. If any one has a tree which can beat this MEEHANS' MONTHLY would like to place it on record.

SKILL IN GRAPE CULTURE. — Few people understand that grape growing is a science as well as an art, and that when the science is thoroughly understood, the art becomes very simple. The European grape is cultivated to a large extent in the old world under glass ; indeed, in England it is the only way in which the European grape can be cultivated, and those who have made a study of the science, grow them to such perfection, that those who have never seen grapes grown under this method, can have little comprehension of the skill which ensues after the acquisition of this knowledge. We give with this, an illustration of a grape-house department from the London "Journal of Horticulture." As will be seen by the picture, one grape vine alone occupies the whole house, 224 feet in length, and each bunch of grapes follows as regularly after the other in its proper place as if they had been set by a machine. The vignette in front, shows the size of the grape vine stem, which is at the distant part of the house. In our country it is so commonly the case to say that parties can buy fruit cheaper than they can raise; but surely the pleasure of having such a command of the plant as will produce the results illustrated, is a pleasure far beyond what the mere money value of the grape involves. This vine is at an English village called Roehampton.



GRAPE CULTURE UNDER GLASS.

SERVING PINEAPPLE.—It is said that the English way of serving pineapple is to take the fruit out from the rind in a solid cone. This, with its prickly stem attached, is left intact. The pine is then sliced and piled in its natural shape and the rind fitted on. It is thus sent to the table and served.

VERMONT BEAUTY PEAR.—On page 108, Volume II, appeared a notice of this candidate for public favor, which there received commendation because it was pretty as well as good. There are numberless varieties of pears of surpassing flavor too ugly to look at for anything,—but beauty is no disgrace. Indeed, people have been known to sacrifice substantial meals for a feast of beauty. Another sample from Messrs. Rupert revives the point. Why cannot we have more that is pretty as well as good. This belongs to the sugary class.

TWO CROPS OF GRAPES IN ONE SEASON.—California is especially favored in many ways. It seems to be the Paradise of fruit growing. It does not seem to be generally known that they have two crops of grapes often in one season. At the present time, one of the questions with Californian fruit growers is whether it really pays to allow the grapes borne upon the later wood growth to mature ; some believing that the drain on the vitality of the vine, injures it for the future ; while some contend that the plant is just as strong in after years, where these two crops are taken, as it would be with only one.

JAPANESE CUCUMBERS.—The *Hartford Times* states that Mrs. William Seliger, of that city, exhibited Japanese Cucumbers which climb on poles like beans. What are these cucumbers? It may be remarked that our ordinary cucumbers like to grow on bushy wood ; with stout bushy branches stubbed in so that the young tendrils can climb by the stubbs. They grow with great vigor and are remarkably productive. The tendrils cannot cling to large branches as they are too small to clasp them.

BIOGRAPHY AND LITERATURE.

AN OLD TIME CHRISTMAS.

" On Christmas-eve the bells were rung,
On Christmas-eve the mass was sung;
That only night in all the year
Saw the stoled priest the chalice rear.
The damsel donned her kirtle sheen;
The hall was dressed with holly green:
Forth to the woods did merry men go,
To gather in the mistletoe.
Then opened wide the baron's hall
To vassal, tenant, serf and all."—SCOTT.

ARCHIBALD MENZIES.—The names of Menzies and Douglass are inseparably connected with the wonderful trees and beautiful flowers of the Pacific coast. The former, Archibald Menzies, who pronounced his name as if written Ming-is, was one of those great men whose worth becomes apparent so late in life that few are interested in their early history. The exact date and place of his birth are unknown only that he was born somewhere in Perthshire, Scotland, probably in the year 1754. The *Gardener's Chronicle* says he was attached as surgeon and botanist to Vancouver's surveying expedition (1791 to 1795) to Australia, and made a rich collection of herbarium specimens and seeds, and was the first to transmit cones of *Banksia* and other *Proteaceæ* to Kew from Western Australia. It was he, too, who introduced the Chilian *Araucaria imbricata*, though it had been observed and described by several previous travellers. As the story goes, Menzies was at a dinner given by the Viceroy of Chili to Captain Vancouver and his officers, and part of the dessert consisted of nuts of a kind unknown to him. In spite of the old saying, he pocketed some, and took them on board, and having procured some earth, planted them. Several of them germinated, and Menzies succeeded in bringing home five living plants, one of which was taken by Sir Joseph Banks, and the rest sent to Kew. One of these still exists there, though a wreck, and an eyesore to all but the sentimentalists. Smith (*Records*, p. 288) states that, "In 1833 one of these plants, which had previously been kept in a greenhouse, was presented by King William IV. to Lady Granville for her collection at Dropmore. It was then about 5 feet high, and growing in a tub; it is now (1880) a fine tree, 60 feet high."

By the way, is there any fine specimen of *Araucaria imbricata* in the United States?

SIDNEY SMITH ON THE STRAWBERRY.—Mr. C. E. Smith, Philadelphia, says:—

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DR. WM. PEPPER.—When Councilman Meehan, of Philadelphia, inaugurated the small Park movement in that city, it dragged along for several years. He finally got warm sympathy from two distinguished ladies, Mrs. J. Brinton Coxe and Mrs. J. P. Lundy. They founded the City Parks Association, and called a public meeting. At this meeting Dr. Wm. Pepper made a ringing speech which drew popular attention to the work more strongly than ever before. His continued advocacy has had much to do with the success.

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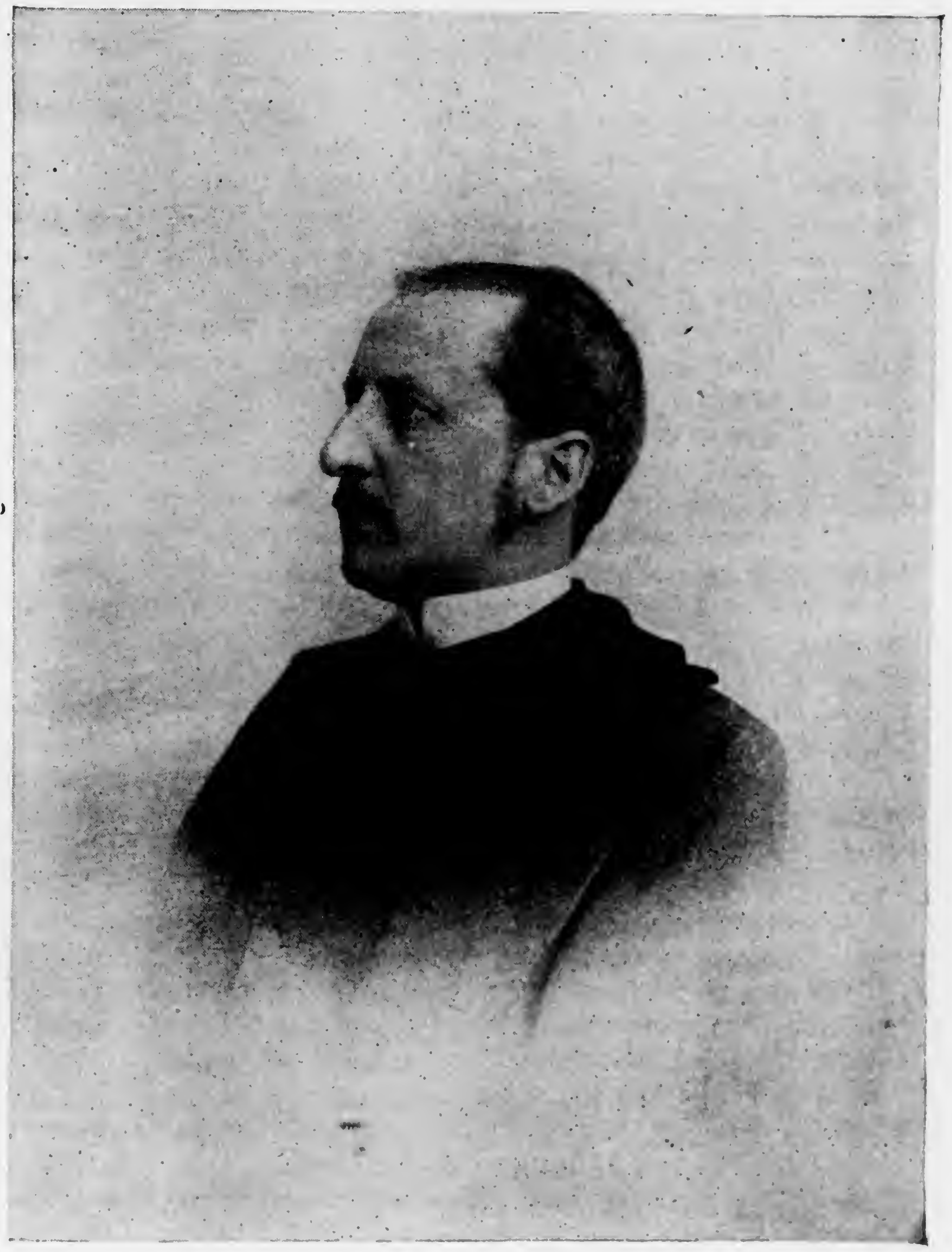

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INTENTIONAL SECOND EXPOSURE

GENERAL NOTES.

Meehans' Monthly in the Pulpit.—From the great leader who told us about the sower who went forth to sow to those who speak of homely truths to this day, the most beloved and the most successful are those who draw their illustrations from gardens or flowers. What would the fate of the following pretty thought from a recent address by Rev. Charles G. Ames have been if the growing seed had not been its inspiration?

"None of us can live well by an occasional good resolution, any more than a seed can grow into a healthy plant by being used as a common plaything, and only now and then put into the earth for a minute or two. Everything depends upon storing up in ourselves, by a habit of well-doing, a great and ever-increasing fund of moral power, which shall be available to brace us against sudden temptation, to help us carry out better purposes, and to hold us steady and true to the ideal."

An eminent Presbyterian divine was kind enough once to say that many of his sermons were suggested by floral thoughts gathered from the writings of the Senior Conductor of Meehans' Monthly. If a copy of the magazine were in the hands of every clergyman in our country, there would be no need of sending pastors on long journeys "in order to get a rest—for the congregation," as a zealous member once expressed it. The publishers will cheerfully send a sample copy free to any desiring to present their minister with a year's subscription to Meehans' Monthly.

Condensation.—Mr. W. C. Egan, of Highland Park, Illinois, kindly says "your remarks on the importance of condensation, in the October number, impressed me with its truthfulness," and the conductors, are more than ever impressed with the truth. Probably a book of 100 pages could not have instructed the reader in the art of grape growing better than the condensed half page in the last issue. Indeed, many a paragraph might be spun into a fair sized book.

The London Journal of Horticulture.—In one of the earlier issues of Meehans' Monthly, a cut was given illustrating an abnormal Fox glove. The cut was reproduced recently to illustrate a similar growth, to which attention was called by Mr. Egan. The London *Journal of Horticulture* claims that the original cut was copied from that publication, without proper credit, and not from the flowers sent to this office. It may have seemed easier to draw from the picture than from the specimen on the table,—recollection has failed. We can only say that if it was copied by the artist of Meehans' Monthly in this way, we much regret that proper credit was not given; the more especially as the friendship always exhibited for Meehans' Monthly, aside from the justice of the case, demands the most respectful and grateful consideration from its young American contemporary.

Knowledge of Mushrooms.—All in the line with suggestions in Meehans' Monthly the State of New York, under the lead of Prof. Peck, the State Botanist, at the suggestion of Mr. Charles E. Smith, an able Philadelphia botanist, is about to issue charts for the use of schools, libraries or kindred associations, showing the edible and the noxious species of fungus. With a little effort the State of Pennsylvania might be induced to join in this good work, as the fungi of both states are essentially the same.

The Next Plate.—The new volume will start in January with a plate of one of the most beautiful of the Pitcher plant family, *Sarracenia variolaris*. Its history will have a popular charm,—while the picture itself is one of the loveliest that have appeared.

Indian Bean Tree.—The *Catalpa* is known in England as the Indian Bean tree. Surely *Catalpa* is quite as easy; and every one, no doubt, understands what is meant when it is used.

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